DIMPLE DELL REGIONAL PARK

MANAGEMENT PLAN

DIMPLE DELL REGIONAL PARK

A DEVELOPMENT
AND MANAGEMENT
GUIDELINE FOR
ALL NATURAL AND
MANMADE RESOURCES
IN DIMPLE DELL
REGIONAL PARK

SALT LAKE COUNTY PARKS & RECREATION
Salt Lake City, Utah **December 1992**
Prepared by: A/E Intra Group, 331 Rio Grande Ave #102
Salt Lake City, Utah 84101

APPRECIATION

The process of creating management and development guidelines for Dimple Dell Regional Park has involved the efforts of many people. In particular we want to recognize the Dimple Dell Advisory Board for their contributions of time and information in the production of this planning document. Appreciation must also be given to Salt Lake County for efforts to preserve the Dry Creek Drainage so that Dimple Dell Park will always be one of the communities greatest assets.

The enthusiastic input from the Advisory Board and Parks and Recreation Division in the completion of this document deserves many thanks. However a deeper appreciation needs to be given for their recognition of the Park's importance as a reserve for nature in the urban setting of the Salt Lake Valley. Their foresighted efforts to maintain and enhance the natural character of the park site, will be enjoyed by many today and in generations to come.

Salt Lake County Parks and Recreation

Glen Lu	Director of Salt Lake County Parks & Recreation
Emery Crook	Director of Planning/Salt Lake County Parks & Recreation
Robert Scott	Project Manager/Salt Lake County Parks & Recreation

Dimple Dell Advisory Board

John Shakula	Chairman
John Fairchild	Co-Chairman Division of Wildlife Resources
Larry Castle-Fericks	Utah Audobon Society
Paulina Flint	White City Community Council
Ralph Carlson	Committee Member
Ty Harrison	Chairman Nature Center Sub-Committee/ Utah Native Plant Society
Susan Nebeker	Sandy Education Foundation/Library Committee
Faye Parker	Historian
Jan Van Capen	Sandy Area Chamber of Commerce
Diana Van Uitert	Utah Horse Council/Sandy Recreation Trail Committee
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INTRODUCTION SECTION 1

1.01. Purpose For Park Management

Park management consists of a strategic plan for protecting, preserving and developing natural resources. The Dimple Dell Park management plan is a decision making tool for Salt Lake County. It will provide guidelines for proper and sensitive development and treatment alternatives to remediate disturbances.

The natural resources in Dimple Dell Park have suffered through 25 years of disturbances, ranging from human abuses to natural disasters. Sensitive management of the parks natural resources, requires not just an understanding of site problems, but a perspective for the value of the environment.

The purpose of Dimple Dell Regional Park is to provide quality experiences for people in a "Nature Dominated Environment". The realization of this purpose will be fulfilled as wildlife habitats and corridors are preserved, site disturbances are rehabilitated, native vegetation is restored, and historical values are perpetuated.

Issues that the management plan focus on are: resource inventory and analysis, resource sensitivity, identification of severely disturbed sites, development of mitigation techniques (treatment alternatives), costs estimates for treatment alternatives and development, an implementation program, and administrative policy guidelines.

Implementation of the management plan, addresses preservation, rehabilitation and development priorities and strategies that Salt Lake County can methodically carry out.

The campaign to educate the public about preservation and rehabilitation of Dimple Dell Park, needs to start with Salt Lake County and be perpetuated by education groups and organizations. In the past, education groups and organizations have taken responsibility for this effort.

Park operations and maintenance will be the responsibility of Salt Lake County. Volunteer efforts from organizations and groups, will play an important role in sustaining the park management plan.

Park rules and regulations clarify appropriate and inappropriate activities and uses allowed in Dimple Dell Park. Regulations are important components of a comprehensive management plan. With proper enforcement, and education programs, public usage can be modified and controlled.

1.02. Park Development

Dimple Dell park has suffered from years of neglect and abuse. The publics outcry for preservation of this environment, has prompted Salt Lake County government to act judiciously to rescue this property from deteriorating any further.

Salt Lake County acquired the Dimple Dell property inorder to preserve this island of urban natural area. The proposal for the 1972 Land and Water Conservation Fund Project stated, "...Will include plans to leave most of the tract in its natural open condition, thus preserving its beauty. Part of the land, however, will be developed with facilities for nature study, hiking, walking and equestrian trails, picnic facilities, area(s) for sledding and tubing and other winter sports."

A management plan for Dimple Dell Park will support Salt Lake County in making sound development decisions. The parks sensitive environments, its vast size, and the desire to serve multiple uses, clarifies the need for a well-thought-out plan.

1.03. Park History

Dimple Dell Regional Park was established in 1963 when Salt Lake County made its first of several land purchases along the Dry Creek

drainage. These purchases were in response to a comprehensive master plan recommending large areas of land be bought by the County to preserve open space. Land acquisitions continued until 1981, when the purchase of land was brought to its present size and configuration.

Dimple Dell Regional Park is a 643 acres parcel of land located in the South East quadrant of Salt Lake County. The parks western boundary is Third East and its eastern boundary is Thirtieth East (Dimple Dell Road). The North and South boundary of the park falls roughly between 10000 South and 10600 South.

In 1981, a Citizens Advisory Board was appointed to determine appropriate and desirable uses for Dimple Dell Park. At that time, the entire park was designated as an Urban Natural Area and Wildlife Preserve. A single exception was made for acreage which was formerly a landfill, located at the parks western boundary. This specific acreage was designated to be developed and used for little league baseball.

In 1990, Salt Lake County commissioned a Dimple Dell Advisory Board to develop a mission statement for the park. The mission statement consists of a list of general principles that function as a constitution for park development. With the mission of the park firmly established, development issues can now converge from one common point rather than be marked by lack of unified direction.

1.04. Dimple Dell Park Mission Statement
(Developed by the Dimple Dell Advisory Board)

The mission statement for Dimple Dell Regional Park defines what an Urban Natural Area and Wildlife Preserve is, outlines acceptable park uses, programs and development, and defines park management.

The Urban Natural Area and Wildlife Preserve:

1) has clearly defined borders which are the park boundaries.
2) is located in an urban or suburban setting.
3) is an important natural corridor linking the foothills of the Wasatch Range with the Salt Lake Valley.
4) is an area where protection and restoration of native plant communities is essential to maintain the natural corridor and provide habitat for a variety of native wildlife species.

5) is an area where usual natural environment phenomena are permitted to proceed insofar as is possible. Management activities are integral to user safety and the protection and preservation of the area but should always encourage and maintain a natural setting.

6) is an appropriate setting for human recreation and educational activities. In order to be successful in providing this setting for human activities, the park must remain "nature dominated" rather than man dominated." Man is a visitor to the park; the wildlife and plants are its residents.

Acceptable Uses, programs and development:

The mission of the park is to provide for primary and secondary uses and exclude the prohibited uses as follows:

Primary Park Uses:
1) Nature Preserve, with preservation and enhancement of the natural environment.

2) Nature Education, including a Nature Education Center with the main purpose being natural history and cultural history interpretation.

3) Recreation Trails, including hiking, jogging, bicycling, cross-country skiing, and equestrian activities.

4) Picnicking in natural settings.

5) Protection and identification of historic and cultural resources.

Secondary Park Uses:
1) Use of pavilions in some selected neighborhood sites.

Prohibited Uses, Activities, or Facilities:

1) Possession of any weapon, especially those capable of propelling and projectile.

2) Hunting, trapping or molesting wildlife.

3) Unauthorized disturbance or removal of any mineral feature, native plant or plant part, or historical artifact.

4) Use of private motor vehicles of any type except in parking lots and parking lot accesses.

5) Open fires, except in designated areas.

6) Commercial amusement concessions.

7) Golf Course.

8) Facilities for organized league-type sports, except for the little league area over a former landfill as previously noted.

Park Management:

Human intervention and manipulation in the Urban Natural Area is necessary and appropriate to further the mission of the park. Management activities, however, must never exceed what is needed to accomplish specifically defined goals and must always allow for the park to be nature dominated.

The following management activities are appropriate for the urban natural area:

1) Safety management designed to protect both park users and wildlife, as well as adjacent neighbors and their property.

2) Restoration of water resources.

3) Revegetation of areas damaged by human activities.

4) Prevention of degradation by human activities.

5) Participation in appropriate research projects.

6) Maintaining the integrity of wildlife migration corridors.

7) Collection of native plant seeds for revegetation and educational uses.

The following are inappropriate management activities:

1) Introduction of exotic plant or animal species to the park, except at approved recreational facility areas.

2) Construction of permanent structures such as buildings and pavilions below the park canyon rim.

3) Use of motor vehicles unless absolutely necessary.

4) Increasing the number or length of roadways in the park.

5) Removal or disturbance of any mineral feature, native plant, or naturally occurring animal, excepting activities specifically necessary for implementing the park master plan.

6) Use of a signage type or amount which would result in degradation of the visual natural setting.

7) Flood control activities.

8) Introduction of high profile structures.

1.05. Past Studies For Development

Since 1981, several proposals, master plans and feasibility studies have been conducted to determine the appropriate and best uses for Dimple Dell Regional Park. In the preparation of this document, six previous studies were reviewed and evaluated.

1) 1984 Dimple Dell Regional Park Master Plan and Appendixes

2) 1987 Dimple Dell Regional Park Master Plan

3) 1989 Dimple Dell Environmental Assessment

4) 1990 Dimple Dell Park Traffic Study

5) 1990 Dimple Dell Golf Course Comparative Analysis Report

6) 1990 Organizational and Individual Endorsements for the efforts of the Nature Center Task Force Committee/Utah Society for Environmental Education and the Dimple Dell Regional Park Natural Area Proposal

It has taken several steps to develop management and development guidelines for Dimple Dell Park. Some steps were accomplished in succession, (one task completed before moving on to the next task). Other tasks were performed independently. The entire process was guided by the fact that development of certain uses will occur in the park and that all development needs to be carefully implemented.

The following information has been prepared to give a synopsis of the process used in developing these guidelines.

2.01. DATA GATHERING

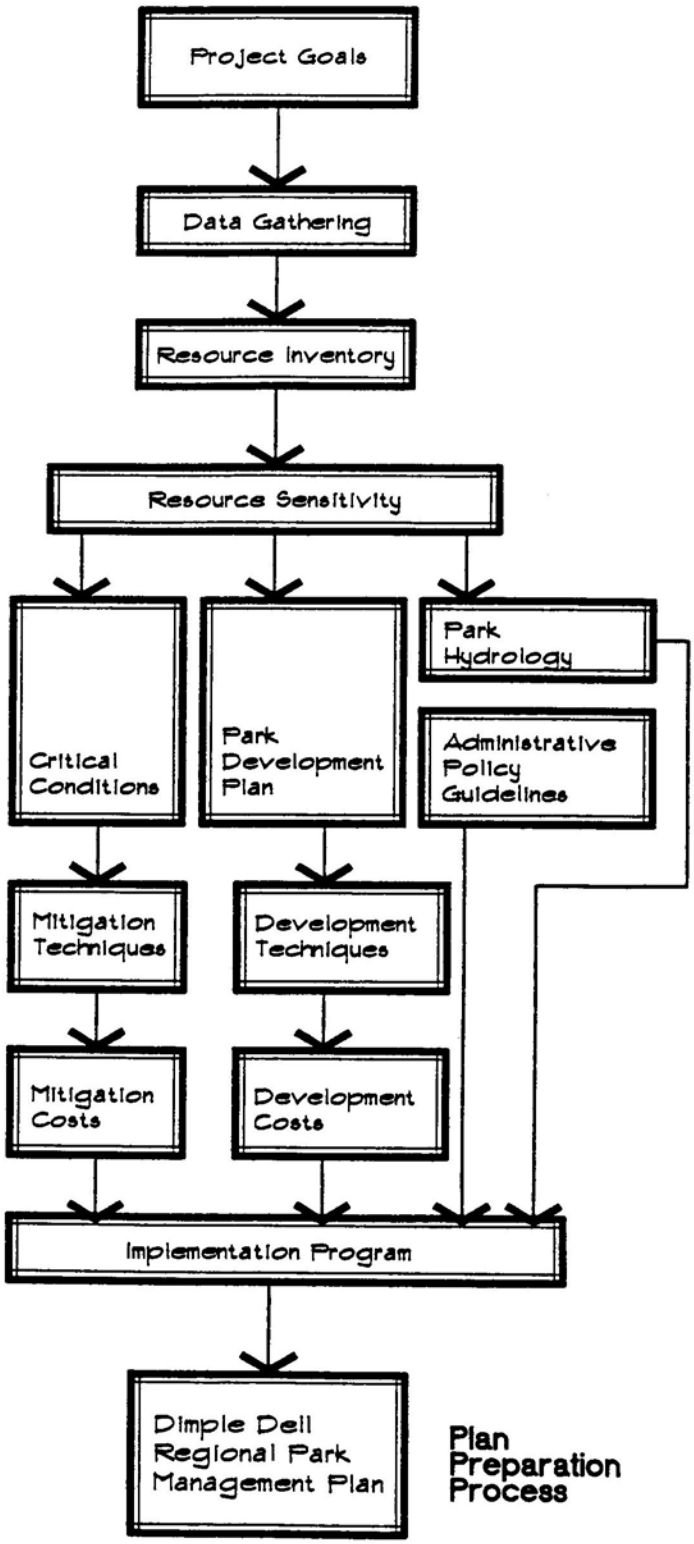
Information was gathered from utility companies, soil and geology reports, on-site visits, hydrology reports, traffic studies, aerial maps, previous master plans and reports, and from individuals with specialized knowledge of the site, to provide the background to begin this project. Even though most of the data was gathered in the early stages of the project, periodic site visits were made and additional information was gathered throughout the project.

2.02. RESOURCE INVENTORY

Following data gathering, resource inventory maps were produced that identified specific physical characteristics of the site. Each of these characteristics were mapped separate from one another.

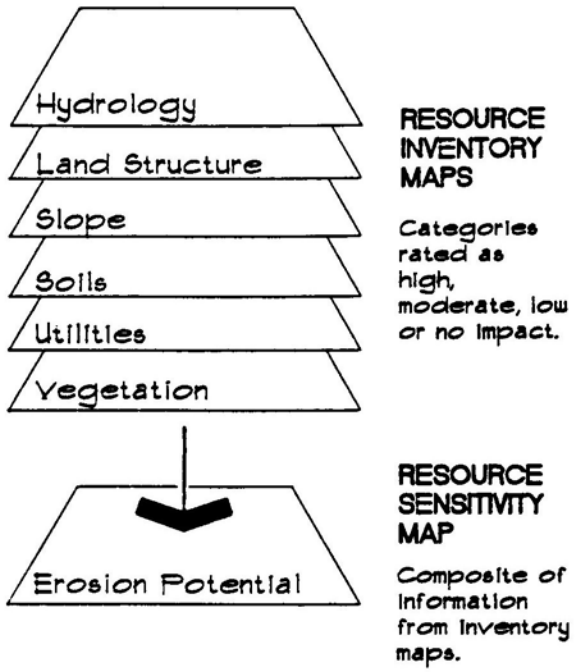
2.03. RESOURCE SENSITIVITY

Having identified the physical characteristics of the site, the next step was to make judgements and determinations as to the sensitivity and condition of those site characteristics. Sensitivity maps were produced which identified areas judged to be sensitive to a particular condition. For example the sensitivity map labeled Erosion Potential identifies the areas of the site sensitive to erosion.



Plan Preparation Process

Sensitivity maps were developed by using an overlay process. The process involved overlaying a series of inventory maps which were specifically related to the sensitivity being evaluated. For example, the inventory maps for Hydrology, Land Structure, Slope, Soils, Utilities, and Vegetation, were used in developing the Erosion Potential Sensitivity Map. Site characteristics of each inventory map were rated as having either high, moderate, low, or no potential for erosion. The information was then combined to produce a composite sensitivity map identifying areas of high, moderate, low, or no condition of erosion potential.



2.04. Critical Conditions

Critical conditions and sensitive sites were identified from aerial photography and from the resource sensitivity study. On-site inspections were used to verify suspected critical conditions (site disturbances).

2.05. Development/Mitigation Details

Detail sheets describing the procedures for implementing treatment alternatives and construction of proposed features, are not designed to be used independently from the management plan.

2.06. Mitigation/Development Costs

Estimates to mitigate site disturbances are based on unit costs. Costs have been generated in this formate to provide Salt Lake County with data to project development costs for any type or size of project.

2.07. Park Hydrology

Sources of water that could be utilized for creating water features and perennial stream flows were investigated. Locations of water sources are shown on a map.

2.08. Park Development Plan

A Design Concept Plan produced by Salt Lake County Parks and Recreation, identifies the proposed development in the park

2.09. Implementation Program

Developed a strategic plan that defines development protocol. Regardless of the type or size of development, specific environmental protections need to be provided, before, during and after development occurs.

2.10. Administrative Policy Guidelines

The history of park administration and previous master plans were evaluated. Goals and objectives for park management and development were formulated. Priorities and strategies for the implementation of park management and development were developed. Appropriate park rules and regulation were researched.

RESOURCE INVENTORY SECTION 3

Managing the natural resources in Dimple Dell Regional Park is a complex issue. Park management requires maintenance of the landscape in its most natural condition, reversing or minimizing environmental degradation and developing park features that do not become foreign elements in the natural environment. The approach to this complex responsibility requires an understanding of the parks natural resource systems, cultural features, and other relevant data. When this information has been collected and analyzed, environmental conditions can be assessed and proper management practices can be employed. Although several systems have been developed to inventory and analyze natural resources, almost all share the following three basic objectives:

1. Develop an understanding of separate ecosystem components (soils, vegetation, hydrology, slope, land structure, and others.)

2. Develop an understanding of the relationship that exists between various ecosystem components (soils and vegetation, slope and erosion, vegetation and wildlife, and others)

3. Determine the condition of resource elements and resource aggregates for specified land uses and/or functions.

The objectives of this study are achieved through a four-phase investigation process:

1. Resource category determination
2. Data collection
3. Data mapping
4. Resource evaluation

Resource Category Determination

The first step in resource planning for Dimple Dell Park, was to determine which resources should be investigated. The resources that were considered most relevant to proposed park activities and land uses were investigated. The factors (soils, slope, vegetation, hydrology, etc.) that determine the suitability of a site for a particular land use are assumed to be critical factors which data must be gather, mapped and evaluated.

Data Collection

Relevant resource information was collected in a variety of ways, site field study, aerial photography, as-built drawings, previous studies, collaboration with park advisory members, review of county government documents, and collaboration with specialized consultants.

Data Mapping

Site resource information has been recorded on maps at a scale of 1"=400' on four site inventory maps covering the entire park.

Resource Evaluation

Following the collection of natural resource data, each component of the environment was evaluated. For example, vegegation was separated into community types, soils were separated in the different classifications and slopes were categorized into various percentages.

Overlay maps prepared for Inventory Study were:

1) Adjacent Land Uses	4) Land Structure	7) Slope	10) Vegetation
2) Aesthetics	5) Land Use	8) Soils	
3) Hydrology/Drainage	6) Off-Site Circulation	9) Utilities	

3.01 ADJACENT LAND USE

The Adjacent Land Use categories identify land uses adjoining Dimple Dell Park. In locations where roads are adjacent to the park boundary, the land use beyond the road is identified. Although not part of the park, adjacent land uses do have an impact on the park and need to be identified so that the nature and intensity of the impact can be determined.

EQUESTRIAN RESIDENTIAL - Residential neighborhoods where equestrian land uses are allowed. i.e. barns, corrals, and training areas, etc.

RESIDENTIAL - Land developed into residential neighborhoods consisting of single family homes.

COMMERCIAL - Land developed for commercial structures and uses. i.e. buildings, parking, service areas, and dumpsters.

ABANDONED INDUSTRIAL - Land located adjacent to the west end of the park where abandoned industrial structures remain.

AGRICULTURAL - Land used for agricultural purposes.

UTILITY - Land used by utility companies for locating service structures.

UNDEVELOPED - Land that has not been developed and is not being used for any other land use listed.

RECREATIONAL - Land that is developed for a recreational use such as a municipal park.

Information Resources:

Information identified on this map was taken from aerial photography and site reconnaissance.

ADJACENT LAND USE 3.01

MAP 3.01.1
MAP 3.01.2
MAP 3.01.3
MAP 3.01.4

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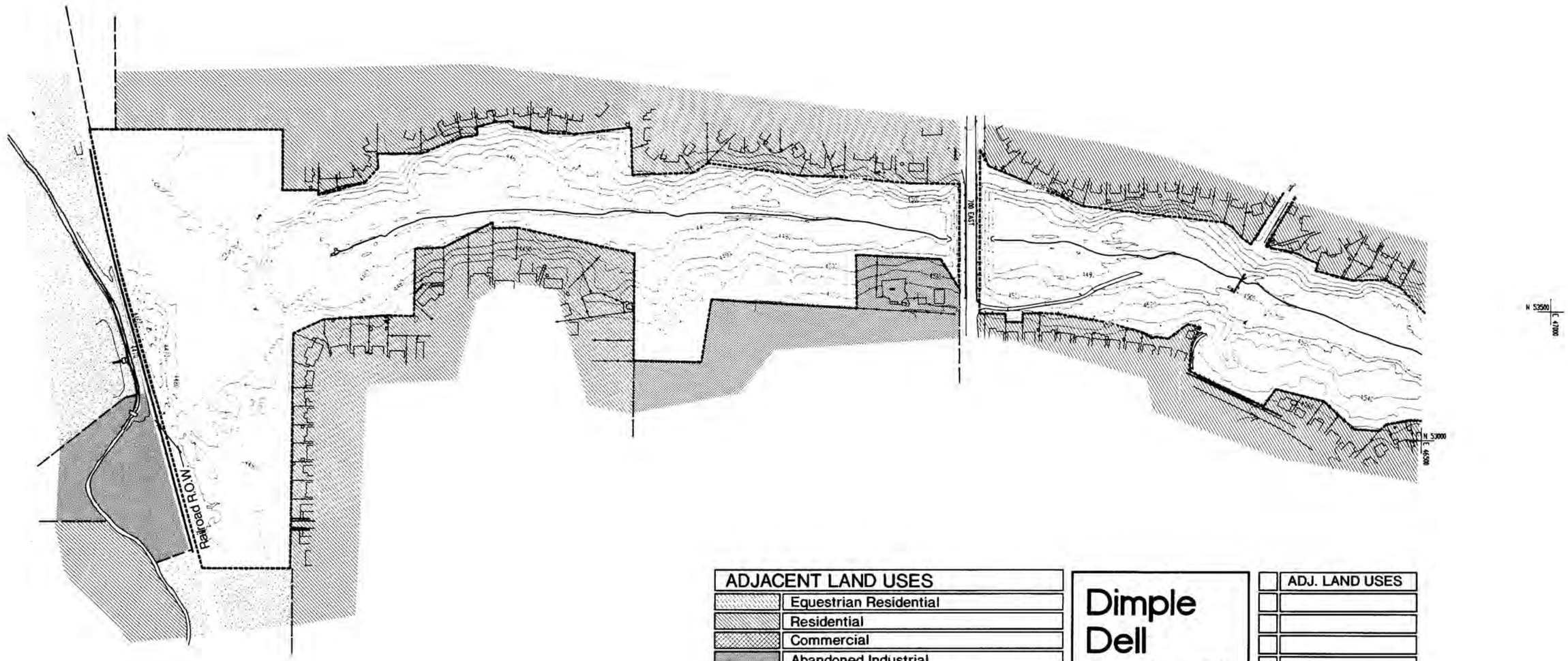

ADJACENT LAND USES
Equestrian Residential
Residential
Commercial
Abandoned Industrial
Agricultural
Utility
Undeveloped
Recreational

Dimple Dell Regional Park

ADJ. LAND USES

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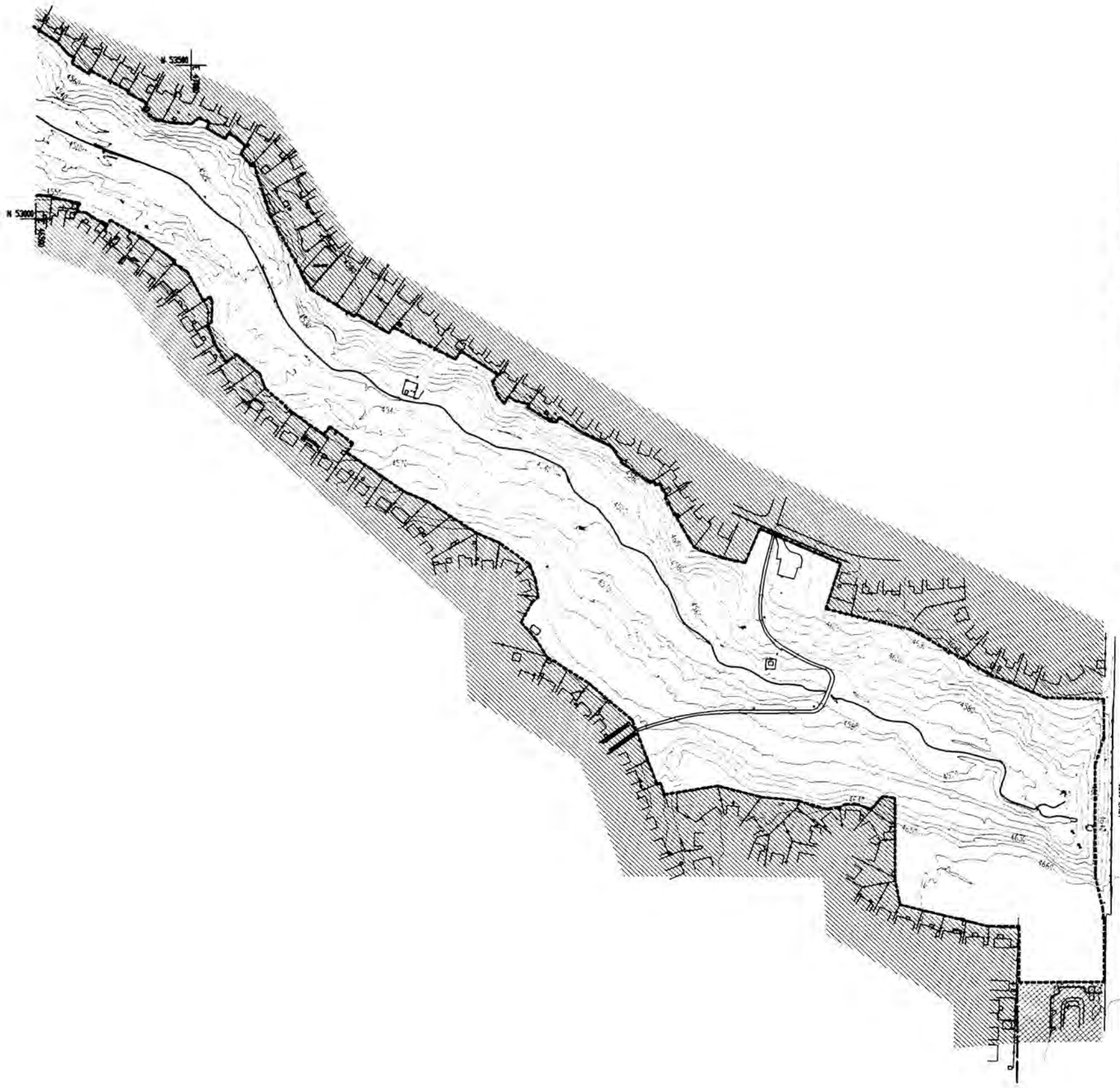

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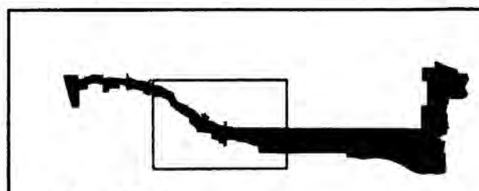
ADJ. LAND USES



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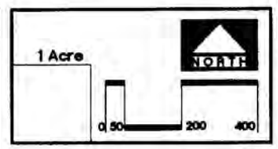

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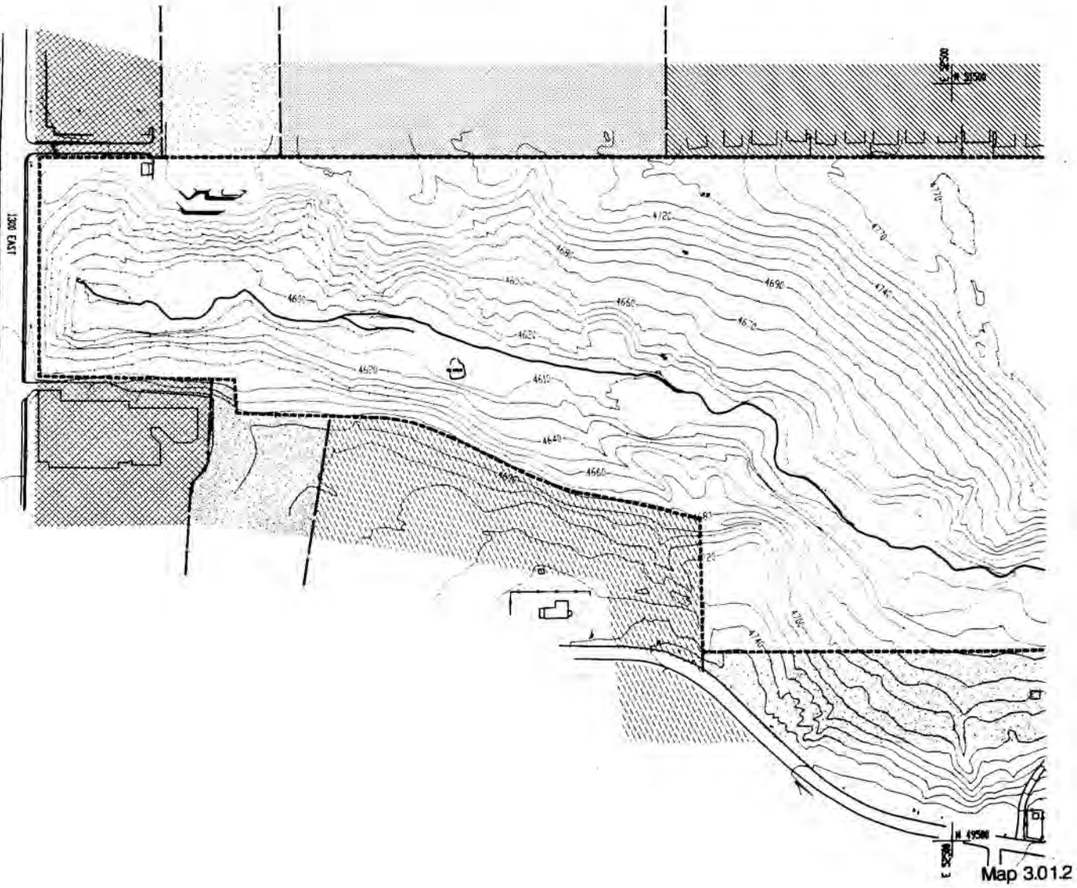
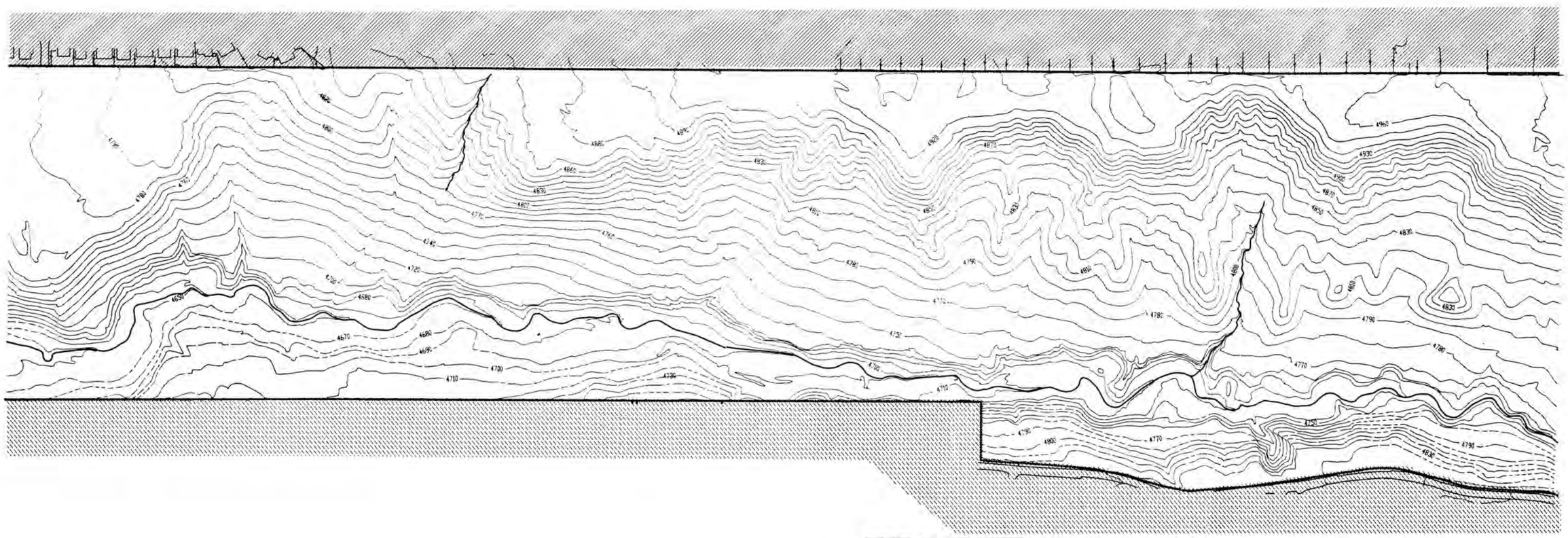


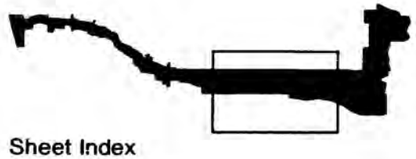
Map 3.01.2



ADJACENT LAND USES

- Equestrian Residential
- Residential
- Commercial
- Abandoned Industrial
- Agricultural
- Utility
- Undeveloped
- Recreational

Dimple Dell Regional Park



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A/E Intra Group
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ADJ. LAND USES

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ADJACENT LAND USES
Equestrian Residential
Residential
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Undeveloped
Recreational

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ADJ. LAND USES

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Map 3.01.4

3.02 AESTHETICS

There are several locations inside and surrounding the park where interesting and panoramic views can be seen. The view locations that are identified on this map are those which the best views of the Dry Creek Corridor environment can be seen from.

Easterly views beyond the park are dominated by the Wasatch Mountain Range. These views act as points of orientation for park users as they travel through the park.

VIEWS WITHIN THE PARK - View locations with significant views inside the park.

VIEWS BEYOND THE PARK - View locations with significant views beyond the boundaries of the park.

VIEWS FROM OUTSIDE THE PARK - View locations from where passers by can view the park.

Information Resources:

The information identified on this map was taken from site visits to the park where various points from which panoramic and isolated views were observed.

AESTHETICS 3.02

MAP 3.02.1
MAP 3.02.2
MAP 3.02.3
MAP 3.02.4

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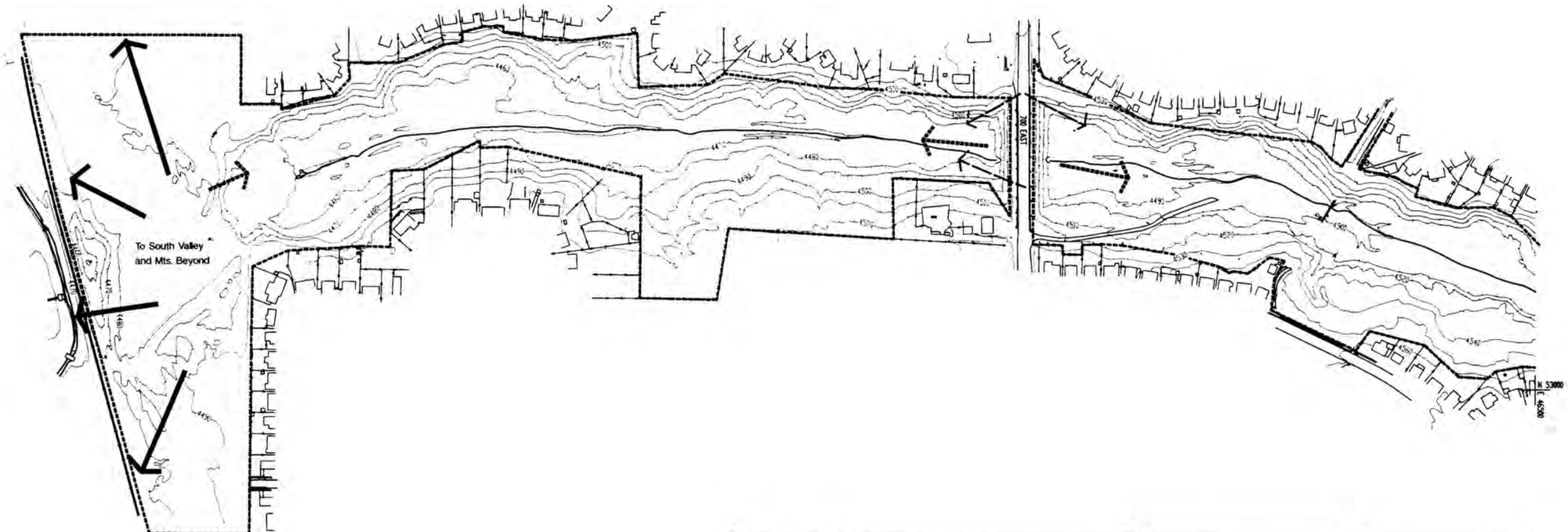

AESTHETICS

- Views Within Park
- Views Beyond Park
- Views From Outside Park

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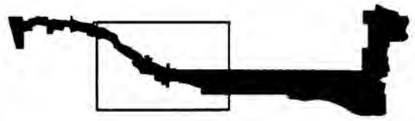
AESTHETICS

Map 3.02.1

Dimple Dell Regional Park

AESTHETICS

- Views Within Park
- Views Beyond Park
- Views From Outside Park



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AESTHETICS

Map 3.02.2

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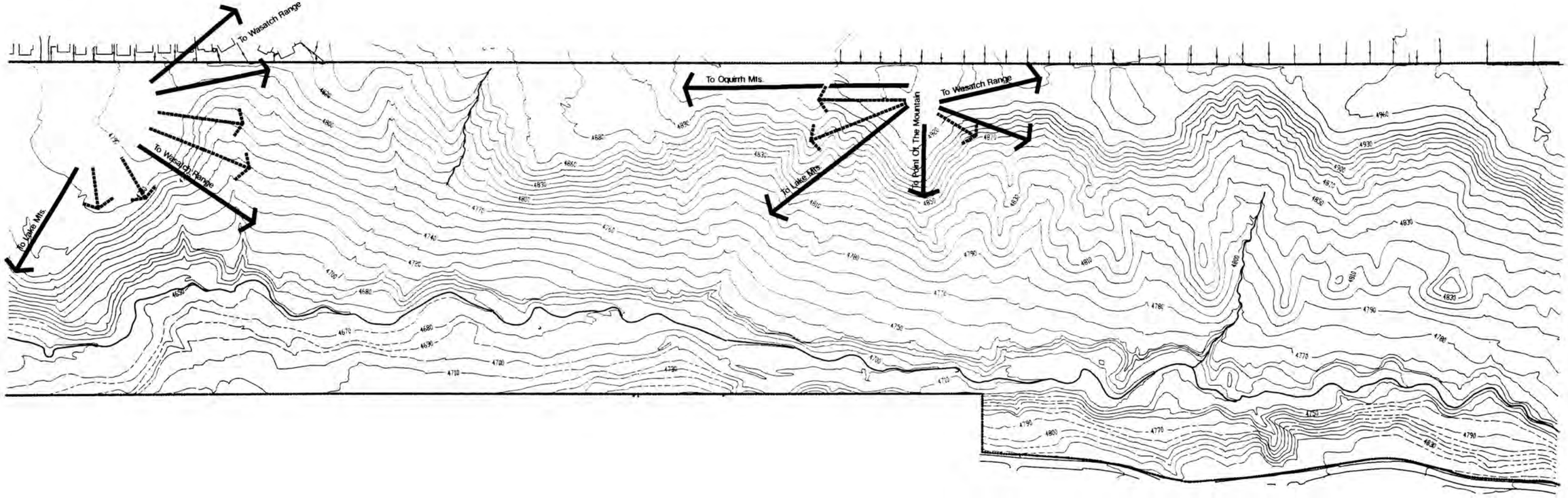

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AESTHETICS

- Views Within Park
- Views Beyond Park
- Views From Outside Park

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AESTHETICS

Map 3.02.3

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AESTHETICS	
	Views Within Park
	Views Beyond Park
	Views From Outside Park

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AESTHETICS

To Lake Mts.

To Ogarm Mts.

To Wasatch Range

To Lone Peak W.A.

To Lone Peak W.A.

To Wasatch Range And Lone Peak

To Ogarm Mts.

Map 3.02.4

3.03 HYDROLOGY / DRAINAGE

Dry Creek is the primary drainage in Dimple Dell Park and runs the entire length of the park. Stream flows in Dry Creek are intermittent because of the situation of water distribution in Bells Canyon. Secondary drainages occur as the result of water accumulation on side slopes. Springs and seeps do exist in portions of the Dry Creek corridor that produce perennial stream flows.

DRY CREEK - The primary drainage in the Dry Creek Corridor.

SECONDARY DRAINAGE - Drainage flowing into Dry Creek from side slopes.

UTILITY DRAINAGE - Water collected from off-site developments and distributed through storm sewer utilities into the Dry Creek channel.

SPRING/SEEPS - Locations where water is surfacing along the Dry Creek corridor.

POND - Natural ponds on the site are non existent, however one man made pond is identified.

Information Resources:

The information identified on this map was taken from on site observations, topographic surveys, and a study of utility maps identifying storm drain systems.

HYDROLOGY/DRAINAGE 3.03

MAP 3.03.1
MAP 3.03.2
MAP 3.03.3
MAP 3.03.4

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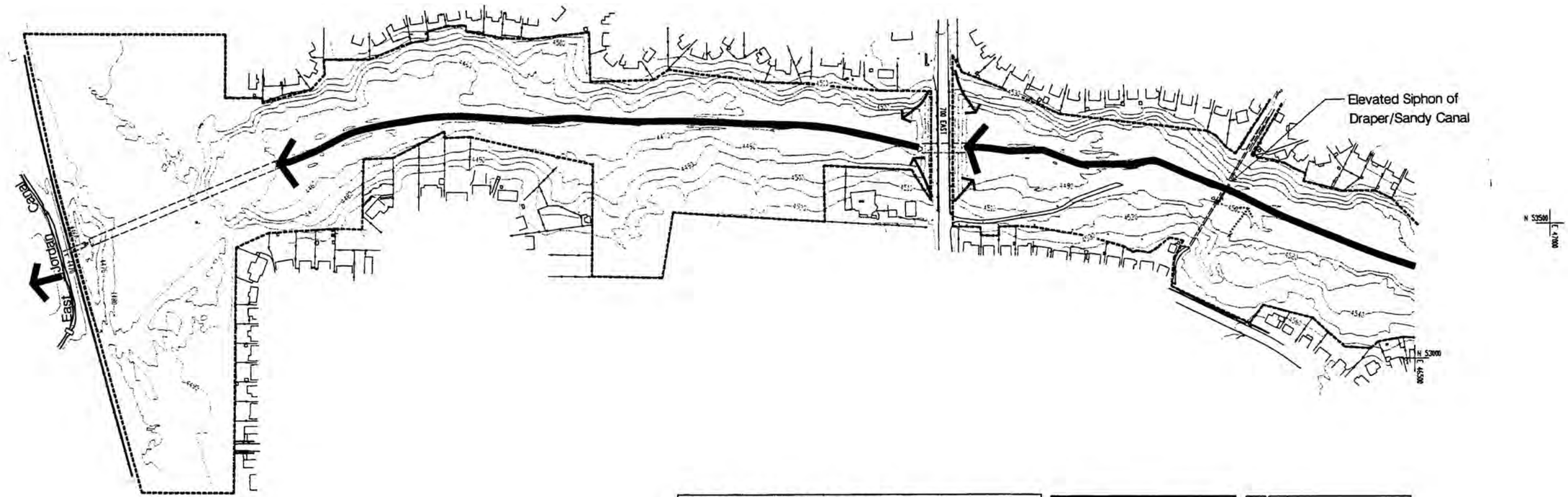

HYDROLOGY / DRAINAGE

- Primary Drainage – Dry Creek
- Secondary Drainage
- Utility Drainage
- Spring/Seep
- Pond
- Underground Culvert
- Historic Irrigation Ditch

Dimple Dell Regional Park

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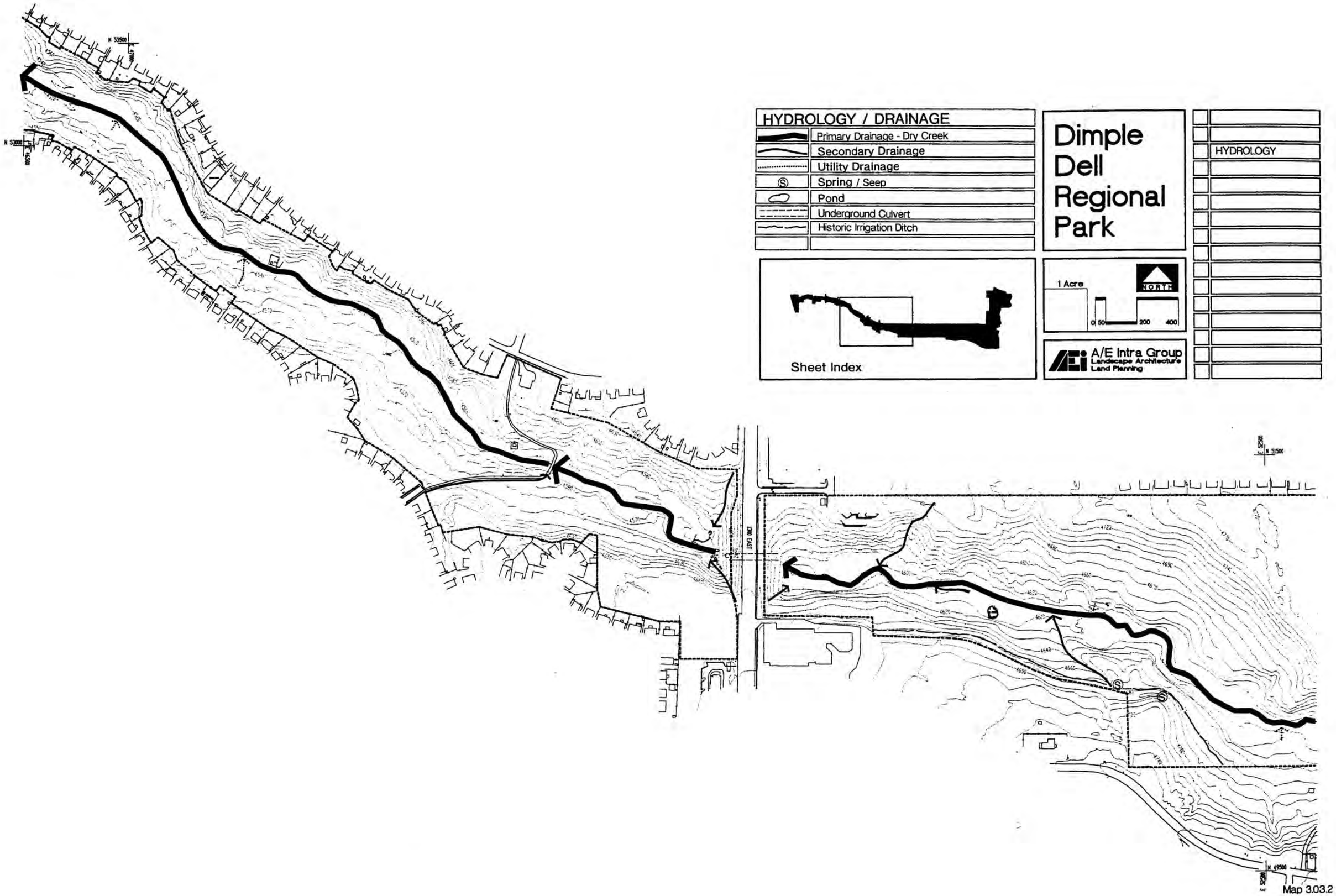
HYDROLOGY

Map 3.03.1



HYDROLOGY / DRAINAGE

- Primary Drainage - Dry Creek
- Secondary Drainage
- Utility Drainage
- Spring / Seep
- Pond
- Underground Culvert
- Historic Irrigation Ditch

Dimple Dell Regional Park

HYDROLOGY

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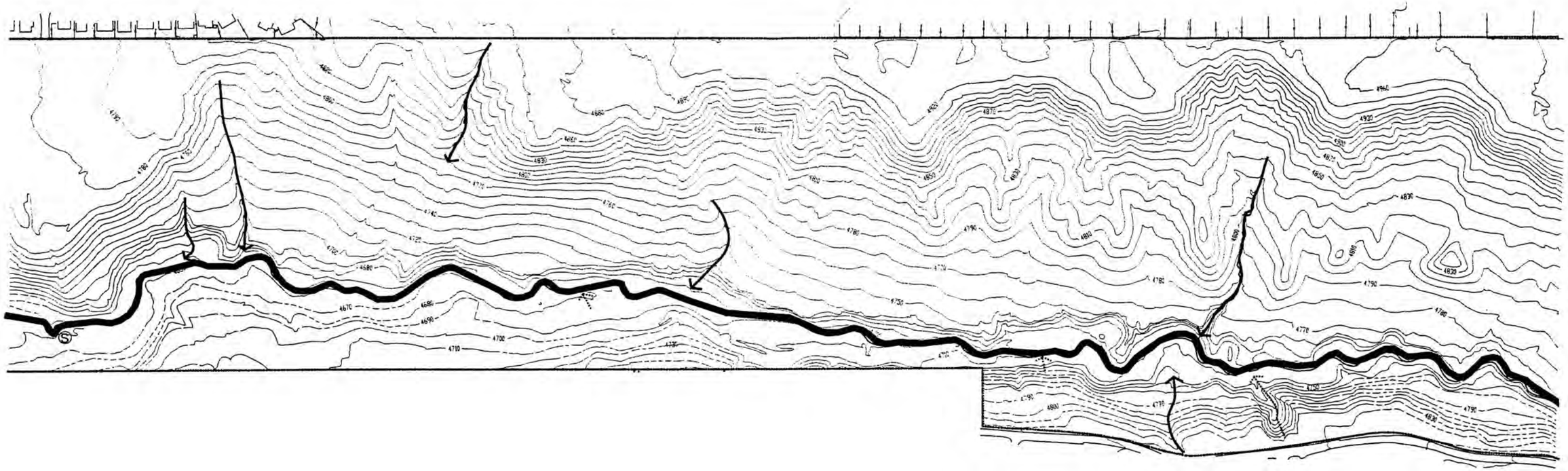

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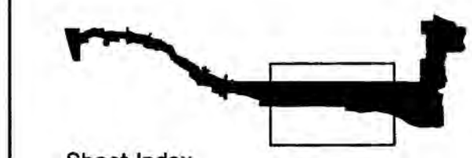
HYDROLOGY / DRAINAGE

- Primary Drainage - Dry Creek
- Secondary Drainage
- Utility Drainage
- Spring / Seep
- Pond
- Underground Culvert
- Historic Irrigation Ditch

Dimple Dell Regional Park

Hydrology



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Map 3.03.3

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HYDROLOGY / DRAINAGE

- Primary Drainage - Dry Creek
- Secondary Drainage
- Utility Drainage
- Spring /Seep
- Pond
- Underground Culvert
- Historic Irrigation Ditch

Dimple Dell Regional Park

Hydrology

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Land Planning

Map 3.03.4

30.4 LAND STRUCTURE

The diversity of land structure in the park is a result of hydrological and geological activity. The overall landform is characterized by steep slopes on two sides of a narrow valley stream corridor. The park landforms are visual and aesthetic resources that enhance and support recreational, interpretive and wildlife functions, spatial experiences, views, and reference points. Although many of the steep slopes are naturally created, some steep slopes are the result of human disturbances.

ELEVATION 100' / ELEVATION 50' - These incremental elevations have been identified on the inventory maps to delineate the dramatic elevation changes that occur in short distances.

STREAM BED / WATER - The Dry Creek stream corridor has been the ultimate creator of the land structure within the park. Other elements such as wind and water erosion have helped shape the land forms of the park, but none have dramatically influenced the land structures like Dry Creek. The current centerline of the stream has been located on the inventory maps along with the meandering flood plain. The meandering flood plain has been influenced by a modified stream gradient created by the 1300 and 700 East roadway fills and the landfill at 300 East. The 100 year flood in 1983-84' also influenced the current flood plain dimension and configuration.

STEEP SLOPE - Slopes between 15% to 30% and 30% and above are delineated on the map as steep slopes. Dimple Dell Park is characterized the most by these slopes. Without steep slopes, the park would not provide the natural wilderness atmosphere.

WASH - Secondary drainage disturbances. These are drainage patterns on steep slopes where soils and vegetation have been disturbed. Vegetation has a difficult time reclaiming these gully areas especially when human disturbances persist.

ESCARPMENT - Steep slopes located primarily in the Dry Creek stream corridor. Slopes range from 0-1 to 1-1. Most of these escarpments are actively eroding and have been for several centuries. When sufficient sloughing has occurred, the slope will begin to stabilize and the angle of repose will develop. When left undisturbed, these escarpments manifest a remarkable ability to regenerate vegetation.

RIM - The top edge of steep slopes is identified as the rim. This land structure is the dominant view from the lowest elevation in the stream corridor when looking skyward. These rims are also the remains of alluvial shorelines of Lake Bonneville at the "Bonneville" level.

TERRACE - Primarily slopes between 0%-15%. Terraces are a typical landform within the park.

PROMONTORY - Two major promontories exist within the park. A promontory is defined as a landform which has significant land mass and high elevation in comparison to surrounding land and provides views to distant portions of the park as well as regional views .

Information Resources:

Information identified on the Land Structure Inventory Maps have been gathered from the following sources:

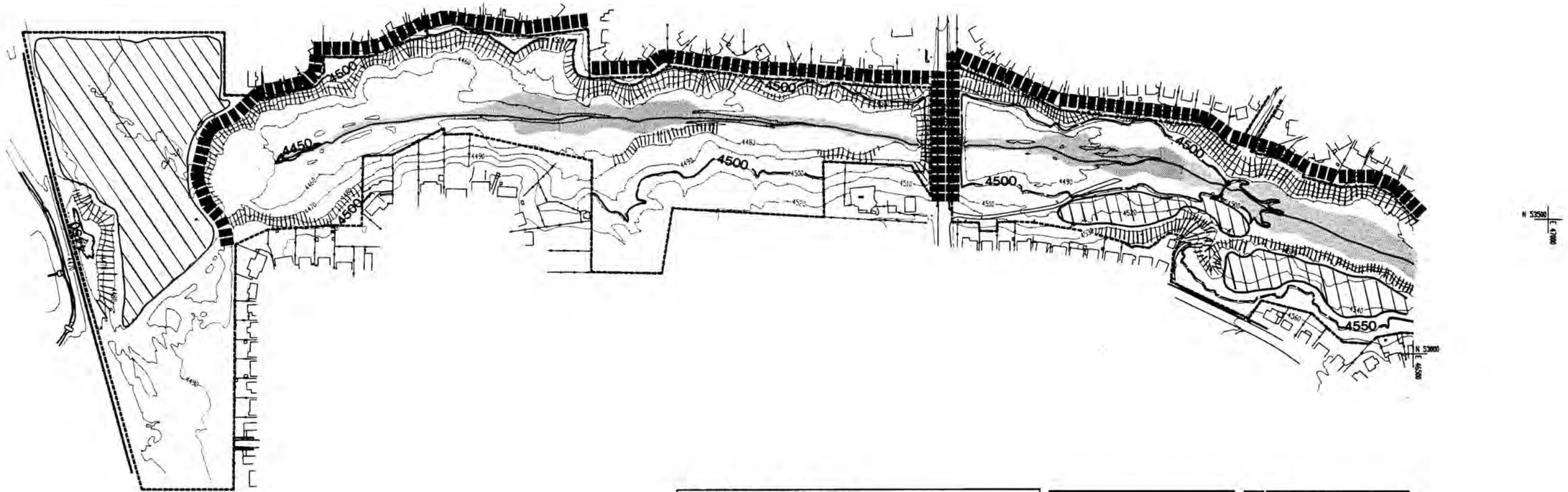
1) Topographic and Aerial maps produced in April 1990 of Dimple Dell Regional Park (1"=200' scale)

2) On-site inventory and data gathering (Winter, Spring, Summer 1992)

LAND STRUCTURE 3.04

MAP 3.04.1
MAP 3.04.2
MAP 3.04.3
MAP 3.04.4

R E S O U R C E I N V E N T O R Y



LAND STRUCTURE	
	Elevation 100' / Elevation 50'
	Stream Bed/Water
	Steep Slope
	Wash
	Escarpment
	Rim
	Terrace
	Promontory

Dimple Dell Regional Park

Sheet Index

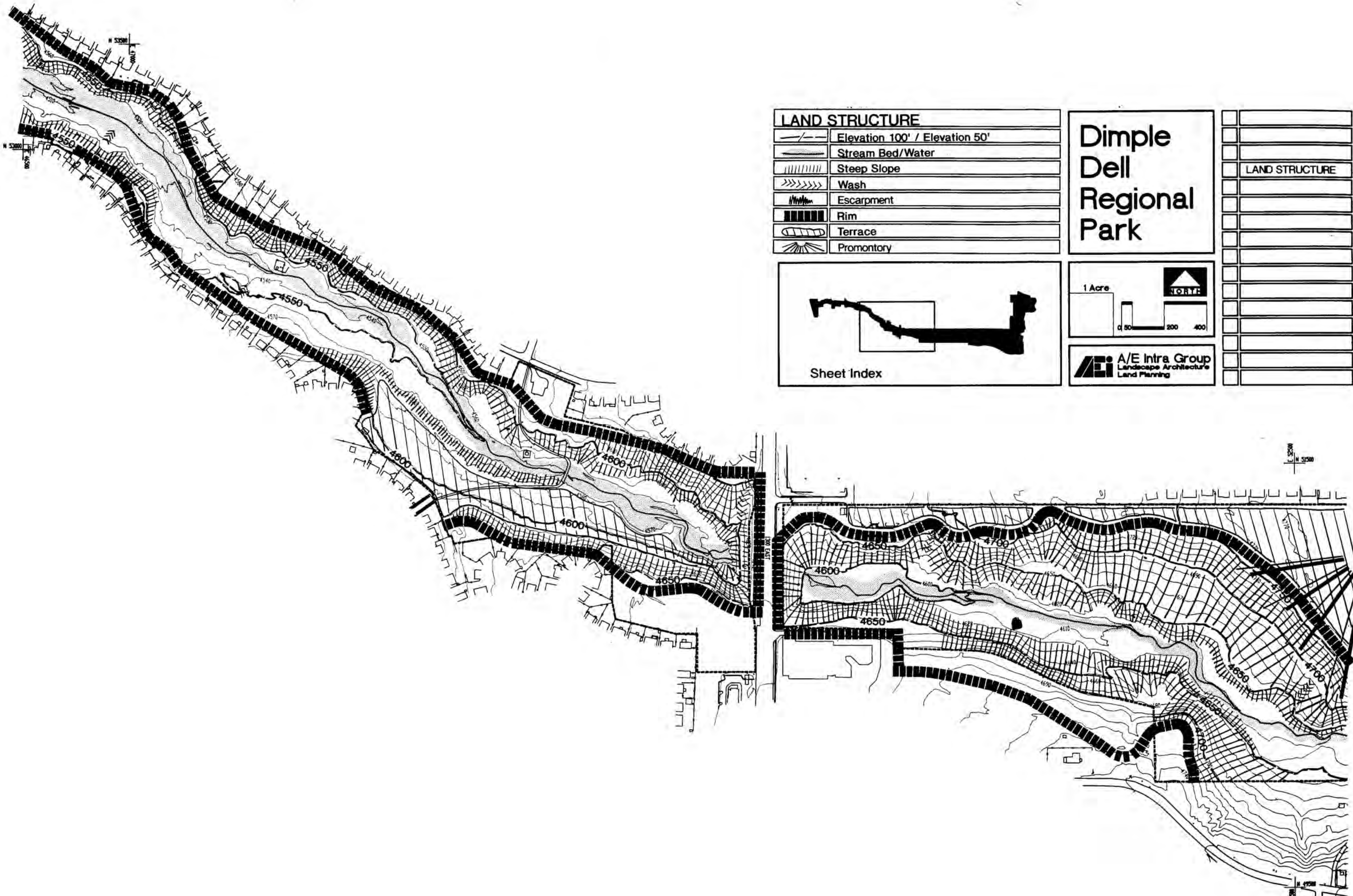
1 Acre

NORTH

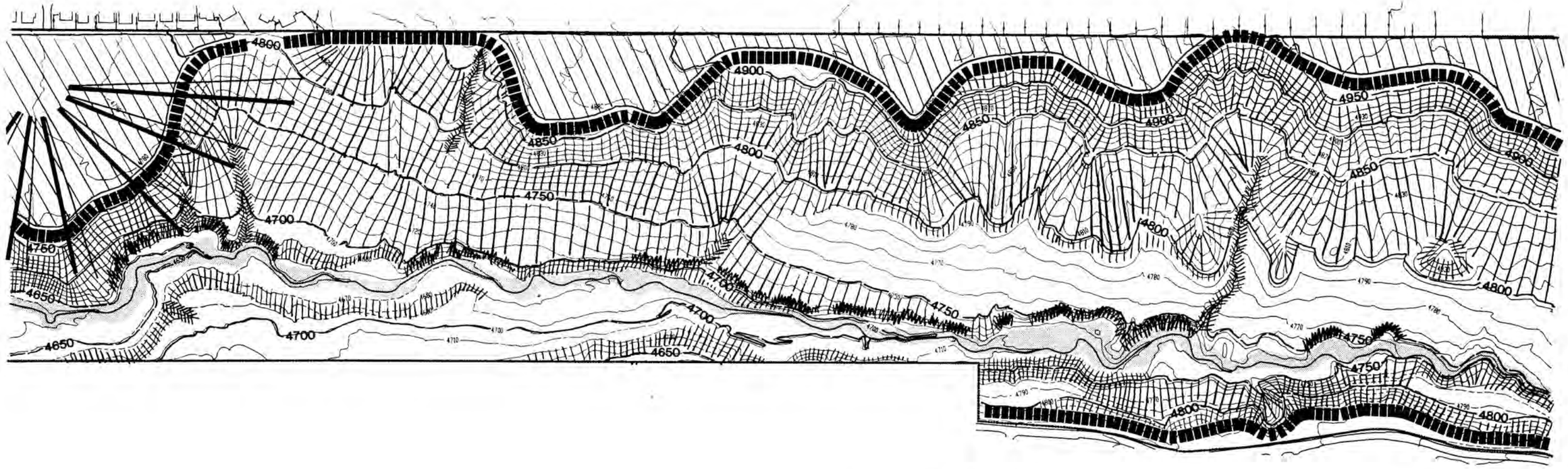
0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning

LAND STRUCTURE


LAND STRUCTURE
Elevation 100' / Elevation 50'
Stream Bed/Water
Steep Slope
Wash
Escarpment
Rim
Terrace
Promontory
Dimple Dell Regional Park
Sheet Index
1 Acre
0 50 200 400
NORTH
A/E Intra Group
Landscape Architecture
Land Planning
LAND STRUCTURE
4550
4600
4650
4700

Map 3.04.2



LAND STRUCTURE

- Elevation 100' / Elevation 50'
- Stream Bed/Water
- Steep Slope
- Wash
- Escarpment
- Rim
- Terrace
- Promontory

Sheet Index

Dimple Dell Regional Park

1 Acre

NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning

LAND STRUCTURE

Map 3.04.3

N 52000

E 59000

LAND STRUCTURE

- Elevation 100' / Elevation 50'
- Stream Bed/Water
- Steep Slope
- Wash
- Escarpment
- Rim
- Terrace
- Promontory

Dimple Dell Regional Park

Sheet Index

1 Acre

NORTH

0 50 200 400

A/E Intra Group
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LAND STRUCTURE

Map 3.04.4

3.05 LAND USE

Existing land use resources in the park are mainly characterized by trail heads, equestrian/pedestrian/cycling trails, , jogging trails, individual picnicking tables, and viewing outlooks with benches. The existing land use patterns have evolved over several years. This evolution has been dramatically increased due to the urbanization of adjacent lands.

DEFINED PUBLIC ACCESS - At strategic locations, pedestrians, equestrians and maintenance vehicles can enter the park. Defined accesses are either a developed trail head or distinct road or trail with a secured gate at or near the boundary of the park.

UNDEFINED PUBLIC ACCESS - Since the park has very little fencing or other buffers preventing indiscriminate entrance, several random access points have been created. These undefined public accesses add to the over-all deteriorating environmental conditions in the park.

HISTORICAL BUILDINGS AND STRUCTURES - This land use consists of a farm house building and the remains of other farm support structures, cultivated agricultural fields and orchard trees. These structures have been identified in the 1989 Cultural Resource Inventory study for their historical value and interpretation and for future historical preservation. Another historic structure which exists in the park is the headgate for the "South Ditch" that delivered water to the Crescent Community.

ARCHEOLOGICAL SITES - Several site have been identified as having archeological value. No investigative efforts beyond identifying the plots of land were undertaken. (1989 Cultural Resources Inventory)

Information Resources:

Information identified on the Land Use Maps have been gathered from the following sources:

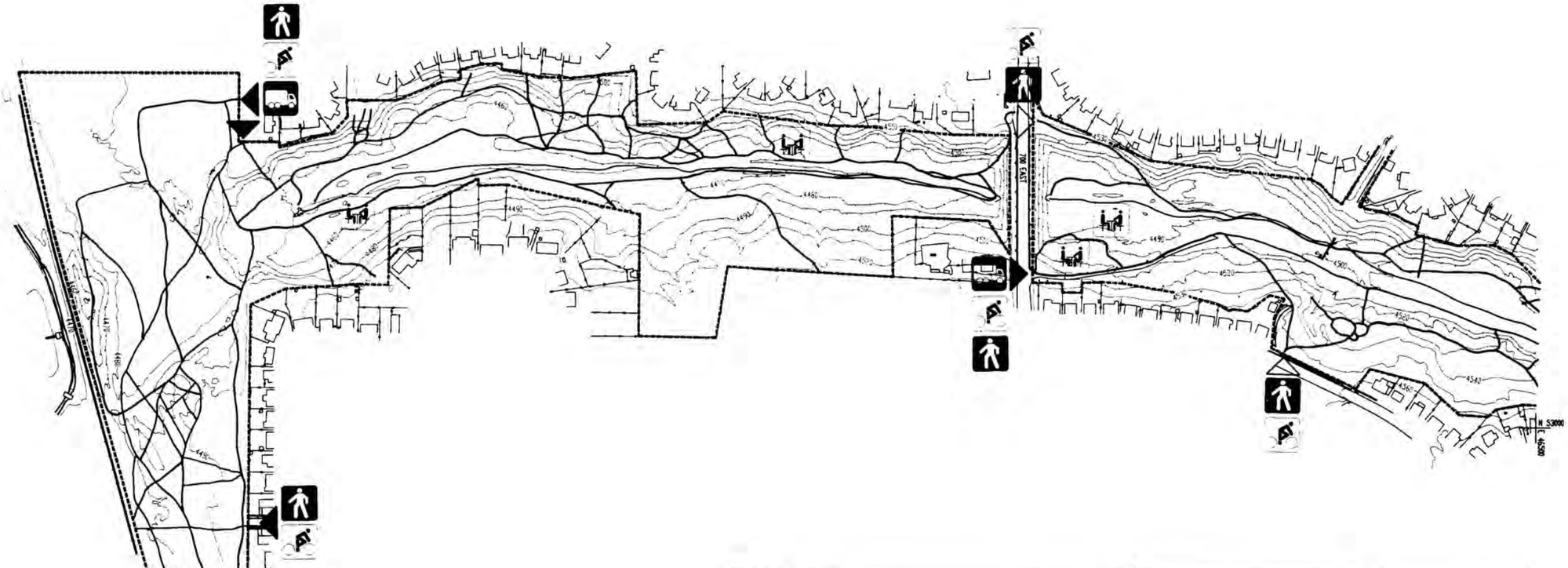
1) 1989 Cultural Resource Inventory of the Dimple Dell Regional Park, Salt Lake County, Utah. Prepared by James D. Wilde and Don D. Southworth; Museum of Peoples and Cultures at Brigham Young University.

2) On-Site inventory and data gathering (Winter, Spring, Summer 1992)

LAND USE 3.05

MAP 3.05.1
MAP 3.05.2
MAP 3.05.3
MAP 3.05.4

R E S O U R C E I N V E N T O R Y



LAND USE

- Defined Public Access
- Undefined Public Access
- Defined Trail Head
- Historical Buildings or Structures
- USES: Viewing/Picnicking/Walking
- Equestrian/Cycling/ Vehicle
- Archeological Sites
- Existing Trail

Sheet Index

Dimple Dell Regional Park

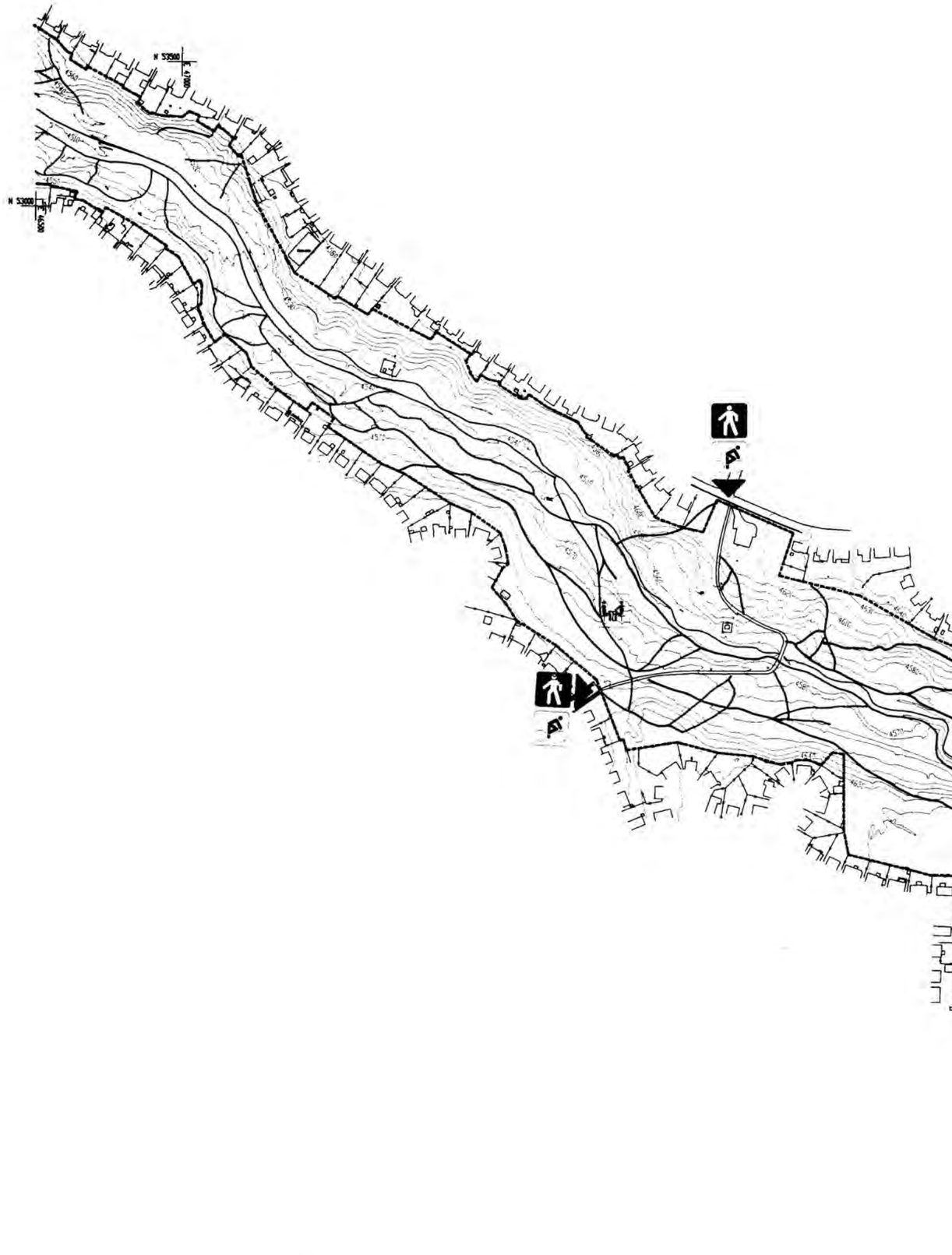
1 Acre

NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning

LAND USE



LAND USE	
▼	Defined Public Access
▽	Undefined Public Access
▬	Defined Trail Head
*	Historical Buildings or Structures
	USES: Viewing/Picnicking/Walking
	Equestrian/Cycling/ Vehicle
	Archeological Sites
	Existing Trail

Dimple Dell Regional Park

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1 Acre

NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning

LAND USE

Map 3.05.2

E 59600 N 52000

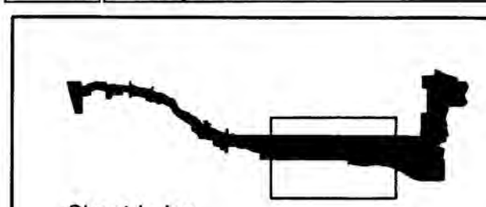
E 55250 N 53500

E 59000 N 50000

E 52500 N 49500

LAND USE	
▼	Defined Public Access
▽	Undefined Public Access
▬	Defined Trail Head
*	Historical Buildings or Structures
	USES: Viewing/Picnicking/Walking
	Equestrian/Cycling/ Vehicle
	Archeological Sites
	Existing Trail

Dimple Dell Regional Park



1 Acre

NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning

LAND USE

Map 3.05.3

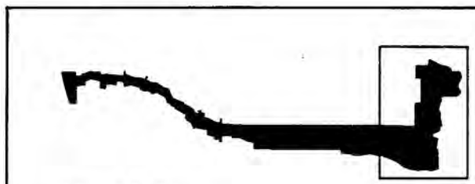
N 52000

E 59000

LAND USE

- Defined Public Access
- Undefined Public Access
- Defined Trail Head
- Historical Buildings or Structures
- USES: Viewing/Picnicking/Walking
- Equestrian/Cycling/ Vehicle
- Archeological Sites
- Existing Trail

Dimple Dell Regional Park



Sheet Index

1 Acre

NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
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LAND USE

Map 3.05.4

3.06 OFF SITE CIRCULATION

This map identifies the circulation routes of vehicles and separates them in categories of usage. A railroad right-of-way is identified at the west boundary of the park. Public transportation routes in the area are shown as well as pedestrian trail routes. Commercial centers and schools are also shown on the map.

INTERSTATE FREEWAY - Freeway systems identified within a five mile radius of the park.

PRIMARY STREET - Streets shown as having an existing ADT in vehicles per hour of 9,000 - 23,000.*

SECONDARY STREETS - Streets shown as having an existing ADT in vehicles per hour of 3,000 - 9,000.*

TERTIARY STREETS - Streets shown as having an existing ADT in vehicles per hour of 1,500 - 3,000.*

PUBLIC TRANSPORTATION ROUTES (UTA) - Routes of UTA busses.

COMMERCIAL NODES - Areas of high commercial activity. These areas are identified as points of gathering and activity.

SCHOOLS; HIGH SCHOOLS, MIDDLE SCHOOLS, ELEMENTARY SCHOOLS - All Schools have been identified in the vicinity around the park. Nature education activities held at the park will provide curriculum for local schools as well as for schools outside Salt Lake County.

Information Resources:

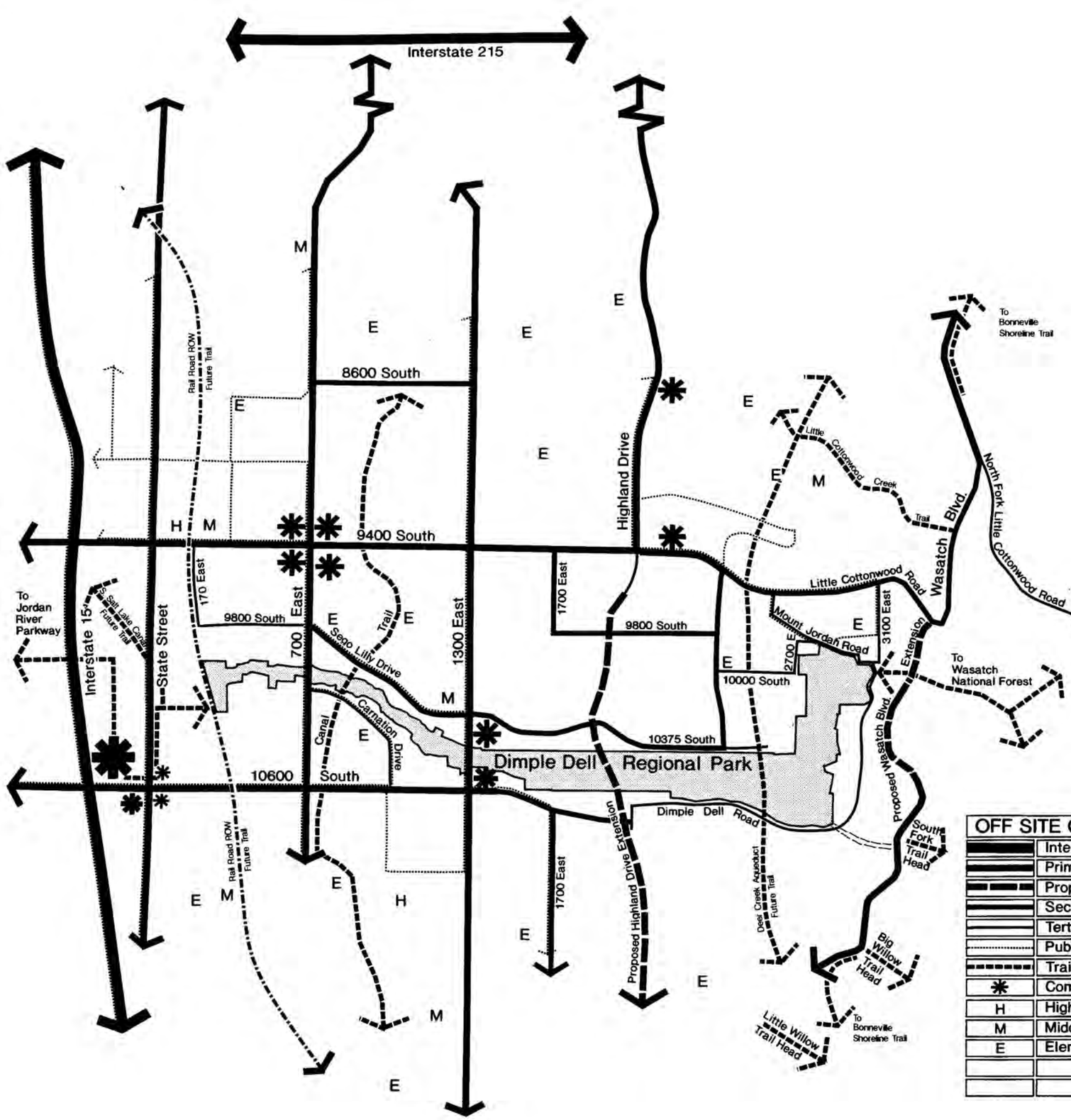
Information identified on this map was taken from state highway maps, UTA route maps, local street maps and the traffic impact study completed by Wayne T. VanWagoner and Associates, July 1990.

*Data for the existing traffic conditions were collected during the weeks of June 11, 1990 and June 19, 1990. ADT figures shown are the summary of existing Average Daily Traffic Volumes (ADT) in vehicles per hour.

OFF-SITE CIRCULATION 3.06

MAP 3.06.1

R E S O U R C E I N V E N T O R Y



OFF SITE CIRCULATION	
	Interstate Freeway
	Primary Streets
	Proposed Primary Street Extensions
	Secondary Streets
	Tertiary Streets
	Public Transportation Routes (UTA)
	Trail Connections
*	Commercial Nodes
H	High Schools
M	Middle Schools
E	Elementary Schools

Dimple Dell Regional Park

NORTH

0 .25 .50 1 Miles

A/E Intra Group
Landscape Architecture
Land Planning

OFF SITE CIRCUL

Map 3.06.1

3.07 SLOPE

Slope information has been separated into four categories ranging from flat to severely steep slopes. Severely steep slopes are the most difficult to manage in the Dry Creek corridor. Most park activities will need to be located on flat to steep slopes (0% to 30% slope). Avoid developing park uses on 30%+ slopes .

FLAT - GENERALLY FLAT 0-5% - All areas in the park that can be considered without slope. These areas are suitable for playing fields, parking, user trails, staging areas, trail heads, picnic pavilions, restrooms and active recreation uses.

MODERATE SLOPE 5%-15% - All areas in the park that have a slight to moderate slope. These areas would be suitable for structures, parking lots, trails and picnicking. Developed uses on moderate slopes will require some soil retention depending on the soil type.

STEEP SLOPE 15%-30% - All areas in the park that have steep slopes. Park activities developed on these slopes will require soil retention and erosion prevention treatments.

SEVERE SLOPE 30%+ - All areas in the park that have severe slopes. The slopes identified in this category are to be left undeveloped in their natural vegetated condition. Park uses such as trails and picnicking are to be located on less severe slopes. If park uses or activities have to be located on 30%+ slopes, mitigation treatments must be implemented to provide for slope stabilization, erosion control, and revegetation.

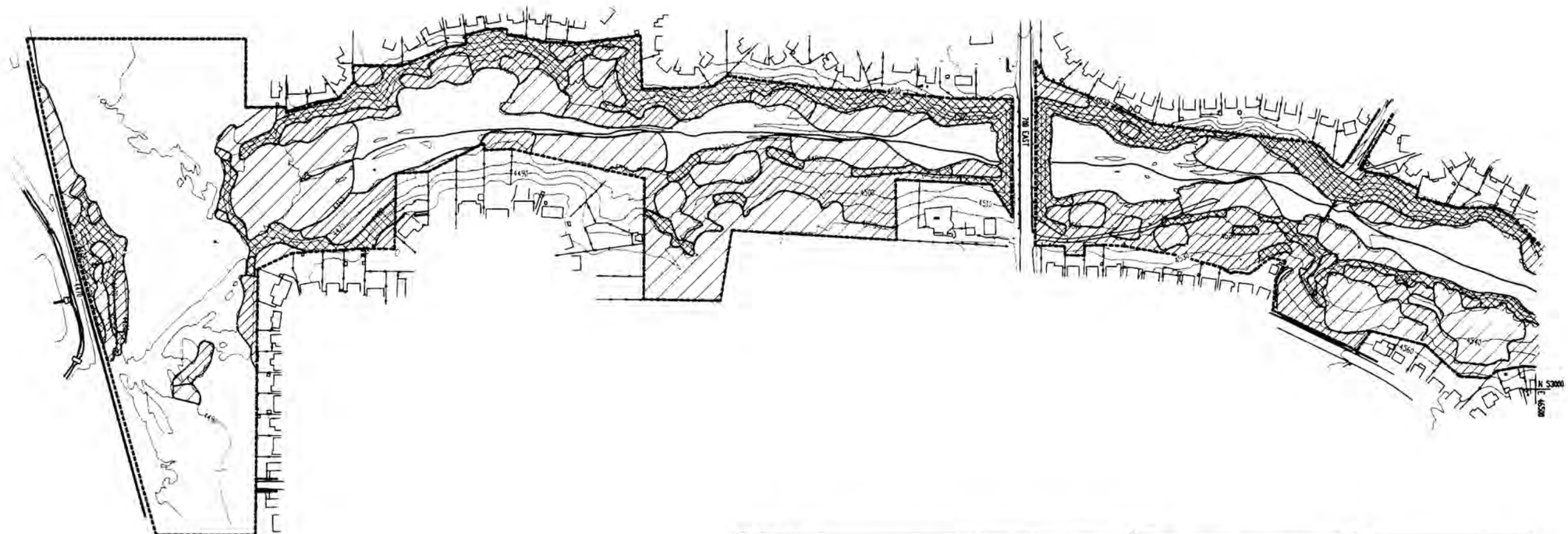
Information Resources:

Information identified on the slope map was taken from topographic maps prepared by Aero-Graphic, Inc., April 14, 1990.

SLOPE 3.07

MAP 3.07.1
MAP 3.07.2
MAP 3.07.3
MAP 3.07.4

R E S O U R C E I N V E N T O R Y



SLOPE		
	Flat - Generally Flat	0-5%
	Moderate Slope	5%-15%
	Steep Slope	15%-30%
	Severe Slope	30% +

Dimple Dell Regional Park

SLOPE

Sheet Index

1 Acre

NORTH

0 50 200 400

A/E Intra Group
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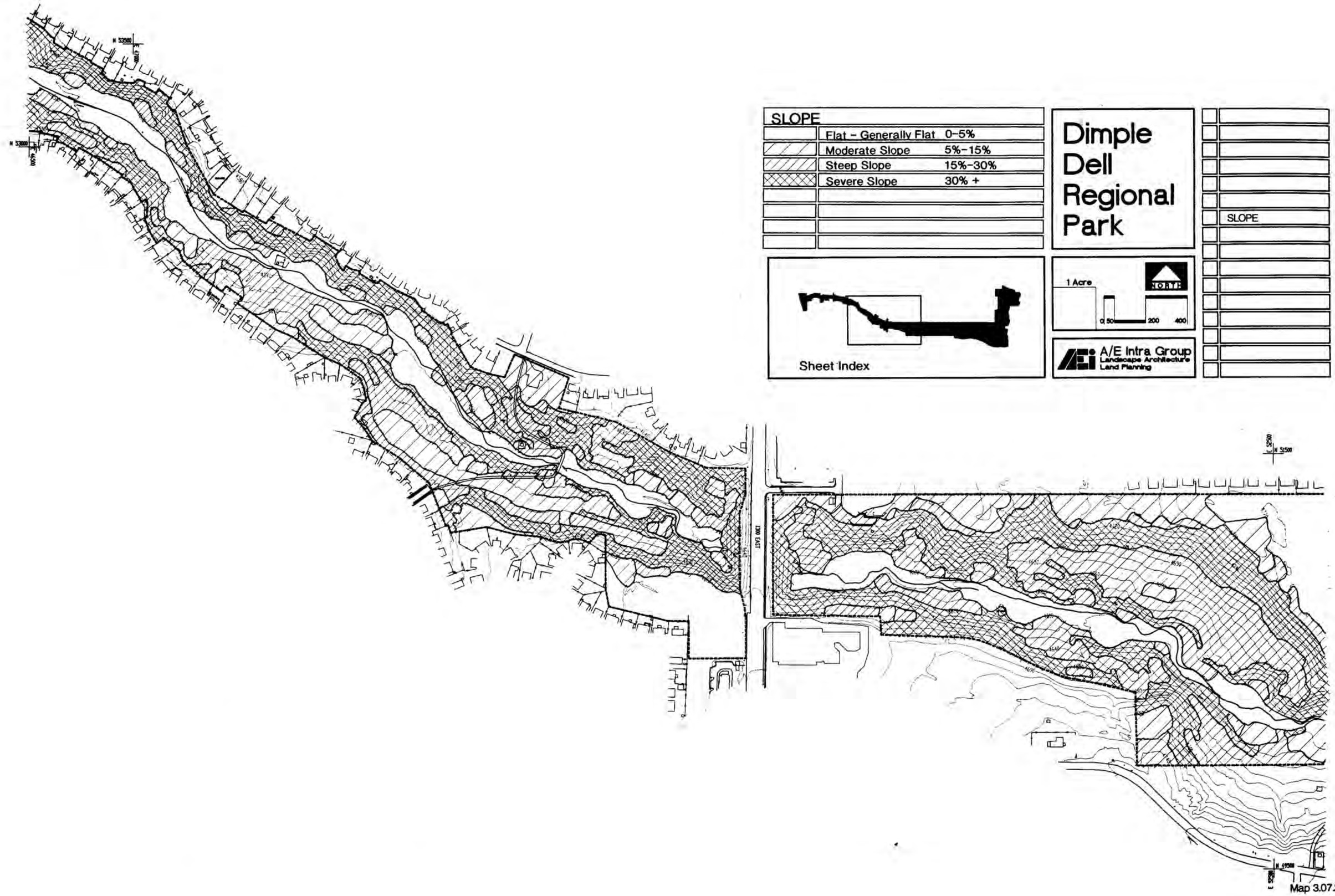
Map 3.07.1



SLOPE	
Flat - Generally Flat	0-5%
Moderate Slope	5%-15%
Steep Slope	15%-30%
Severe Slope	30% +

Sheet Index

Dimple Dell Regional Park

1 Acre

NORTH

0 50 200 400

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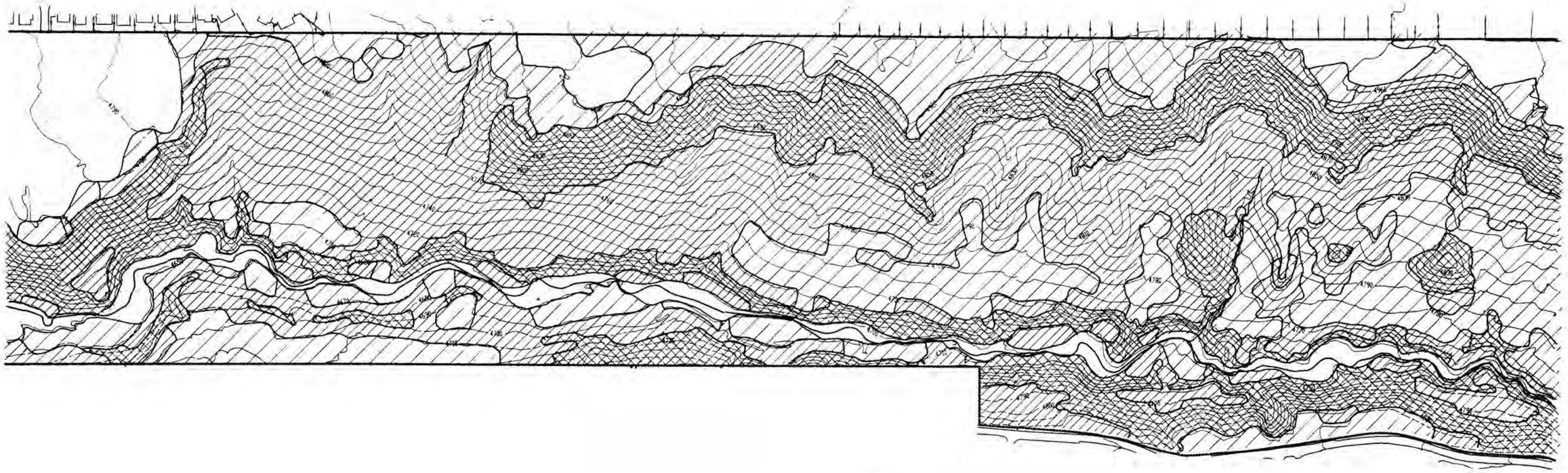
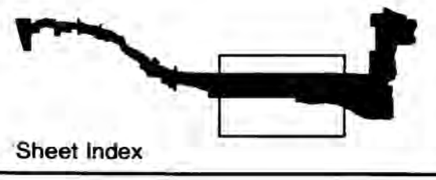
SLOPE

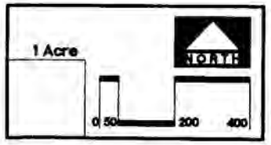
Map 3.07.2



SLOPE		
	Flat - Generally Flat	0-5%
	Moderate Slope	5%-15%
	Steep Slope	15%-30%
	Severe Slope	30% +

Dimple Dell Regional Park





A/E Intra Group
Landscape Architecture
Land Planning

SLOPE

Map 3.07.3

N 52000

E 59000

SLOPE		
	Flat - Generally Flat	0-5%
	Moderate Slope	5%-15%
	Steep Slope	15%-30%
	Severe Slope	30% +

Dimple Dell Regional Park

SLOPE

Sheet Index

1 Acre

NORTH

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A/E Intra Group
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Map 3.07.4

3.08 SOILS

Soil type is a major consideration in identifying a sites capability for supporting development. Soil types will also vary in their ability to support revegetation efforts.

(DU) DUMPS - Uneven piles of material, such as waste rock and concrete, waste products, garbage and other unknown refuse. Inadequate soil coverage has been placed over the land fill area. Additional soil coverage and sealing will be necessary before development can occur.

(Lo) LOAMY BORROW PITS - Deep, stratified alluvial sediments where 2 to 20 inches of material has been removed from the surface. Material remaining is generally sandy loam and is located on 0% to 5% slopes.

(KoB) KNUTSEN GRAVELLY COARSE SANDY LOAM - Primarily found on 0% to 5% slope areas in the eastern portion of the park. Knutsen soil is a deep excessively well drained soil. It has very rapid infiltration and permeability rates. Run off is slow. These soils have a coarse loam texture on top of a coarse sandy loam to gravelly sand. The soils water holding capacity ranges from 3 inches to 5 feet. Revegetation potential ranges from poor to fair.

KsF2) KNUTSEN PRESTON COMPLEX - Located on 0% to 10% slopes on upper terrace and rim areas inside the park. The soil consists primarily of Knutsen Gravelly Coarse Sandy Loam. Revegetation ranges from poor to fair.

(Prd - PrF) PRESTON SAND - This soil type occurs on the north and south rims of the park east of 1300 east. The general description of this soil type is coarse sandy soils with gravel and cobble contents. With wind erosion and sand deposition along the terrace rims, the soil type has been modified. These soils are drained excessively and have high infiltration and permeability rates. Water is slow to run off. With a vegetative cover, Preston Sand erodes very slowly. Water holding capacity is low, ranging from 1.5 inches to 5 feet. Revegetion of these soils ranges from poor to fair depending on their location on wind blown rims.

(SC) SANDY TERRACE ESCARPMENTS - The location of this soil type is found just below terrace rims on north and south slopes and in some portions of the Dry Creek stream corridor. These soils are moderately deep, ranging from loam to sandy texture. Infiltration and permeability rates are slow to moderate. Run off is moderate. Water holding capacity is higher do to the higher silt and loam content. Revegetation potential ranges from poor to fair depending on exposure.

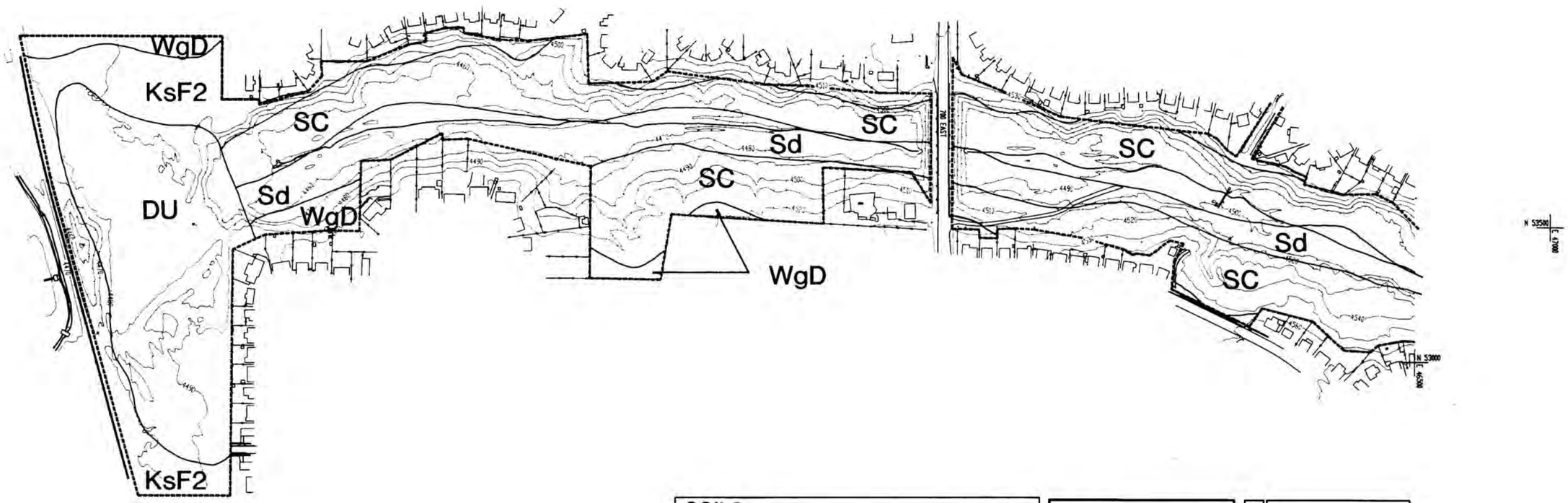
(Sd) SANDY ALLUVIUM - This soil type occurs in poorly drained locations in the narrow Dry Creek stream corridor. Soil texture is predominately sandy but does include areas of sandy loam. Run off is slow. Permeability and infiltration rates are moderate to rapid. Soil erosion caused by the wind is high and moderate from water caused erosion. In some locations along Dry Creek the soils are saturated with water do to springs, seeps and surface water contained in Dry Creek. These soils support riparian vegetation which grows all along the Dry Creek corridor. Revegetation potentials range from fair to good.

(WgD) WASATCH LOAMY COARSE SAND - These soils are located on the upper terraces and rim areas of the park. Water and wind erosion is low in this soil especially when left undisturbed. Otherwise, when soils are disturbed, soil erosion is moderate. This soil type occurs on 1% to 10% slopes.

SOILS 3.08

MAP 3.08.1
MAP 3.08.2
MAP 3.08.3
MAP 3.08.4

R E S O U R C E I N V E N T O R Y



SOILS	
Du	Dumps
Lo	Loamy Borrow Pits
KoB	Knutsen, eroded
KsF2	Knutsen
PrD, PrF	Preston
SC	Sandy
Sd	Sandy, alluvium
WgD	Wasatch

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Dimple Dell Regional Park

1 Acre

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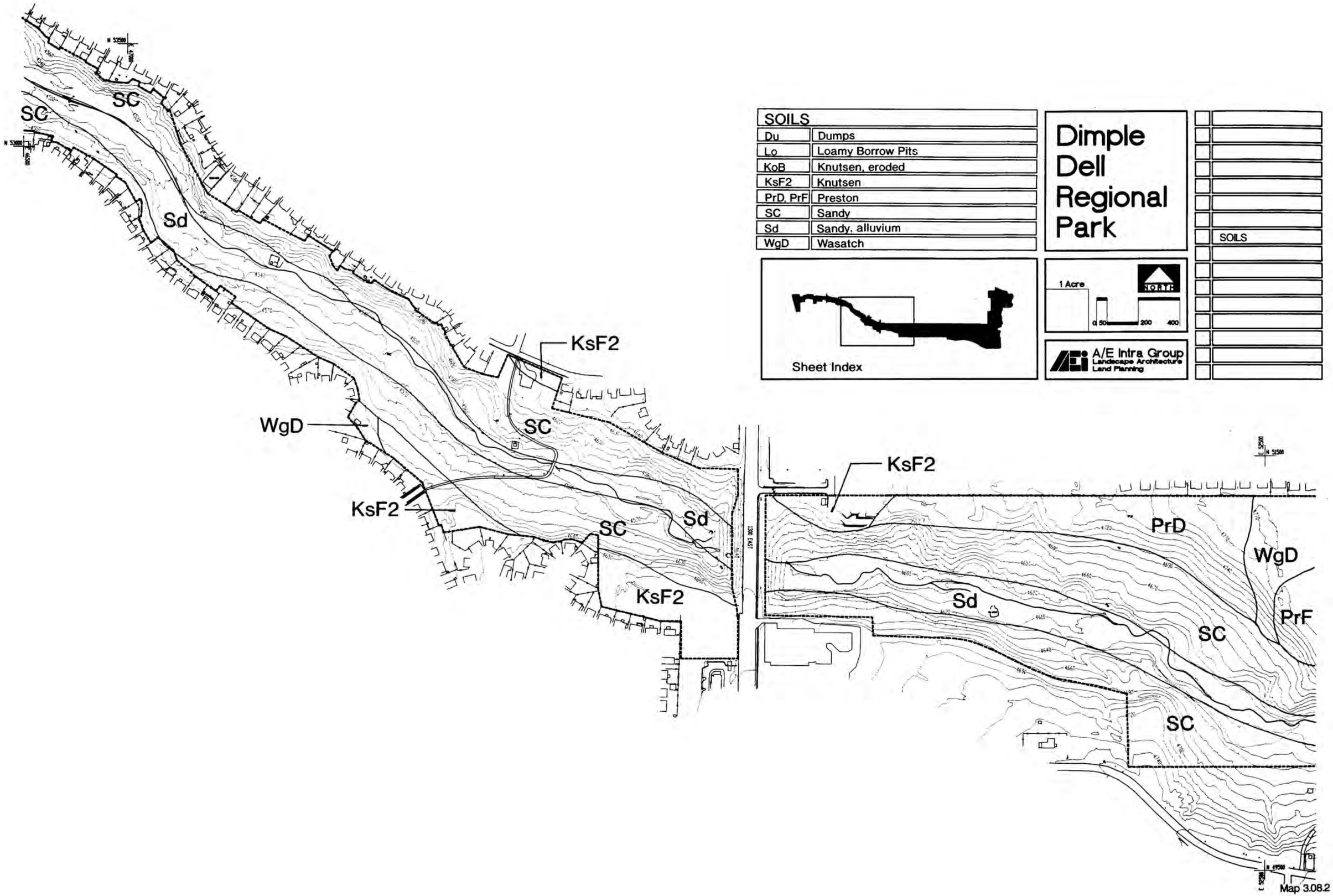
SOILS

Map 3.08.1



SOILS	
Du	Dumps
Lo	Loamy Borrow Pits
KoB	Knutsen, eroded
KsF2	Knutsen
PrD, PrF	Preston
SC	Sandy
Sd	Sandy, alluvium
WgD	Wasatch

Dimple Dell Regional Park

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1 Acre

NORTH

0 50 200 400

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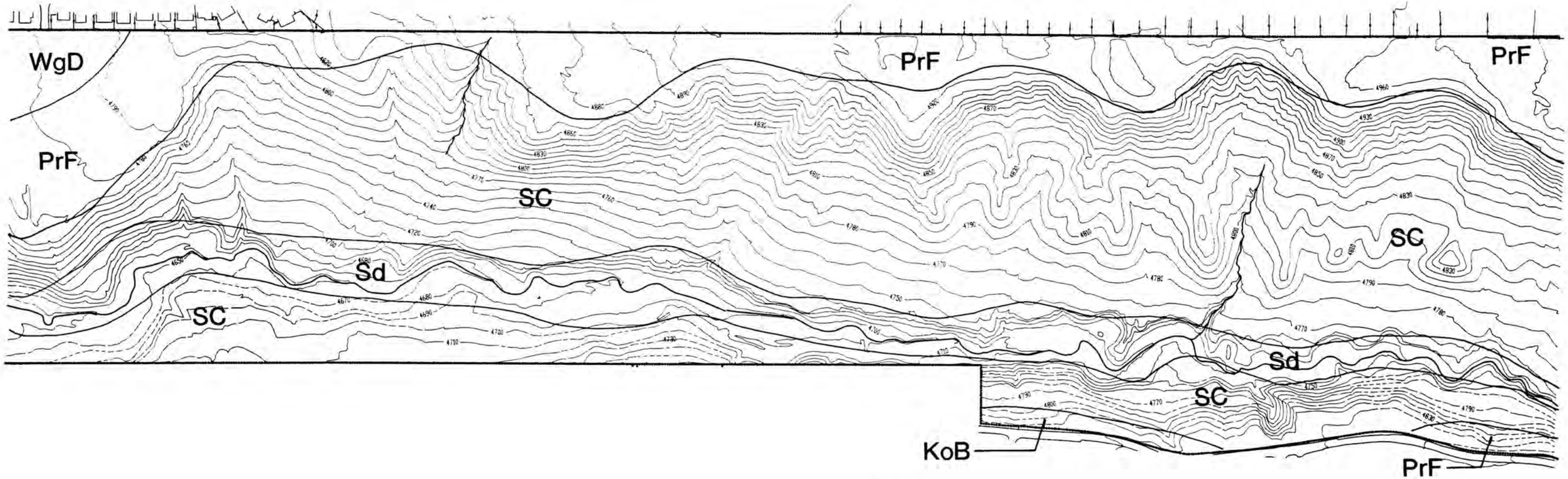
SOILS

Map 3.08.2



SOILS	
Du	Dumps
Lo	Loamy Borrow Pits
KoB	Knutsen, eroded
KsF2	Knutsen
PrD, PrF	Preston
SC	Sandy
Sd	Sandy, alluvium
WgD	Wasatch

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Dimple Dell Regional Park

1 Acre

NORTH

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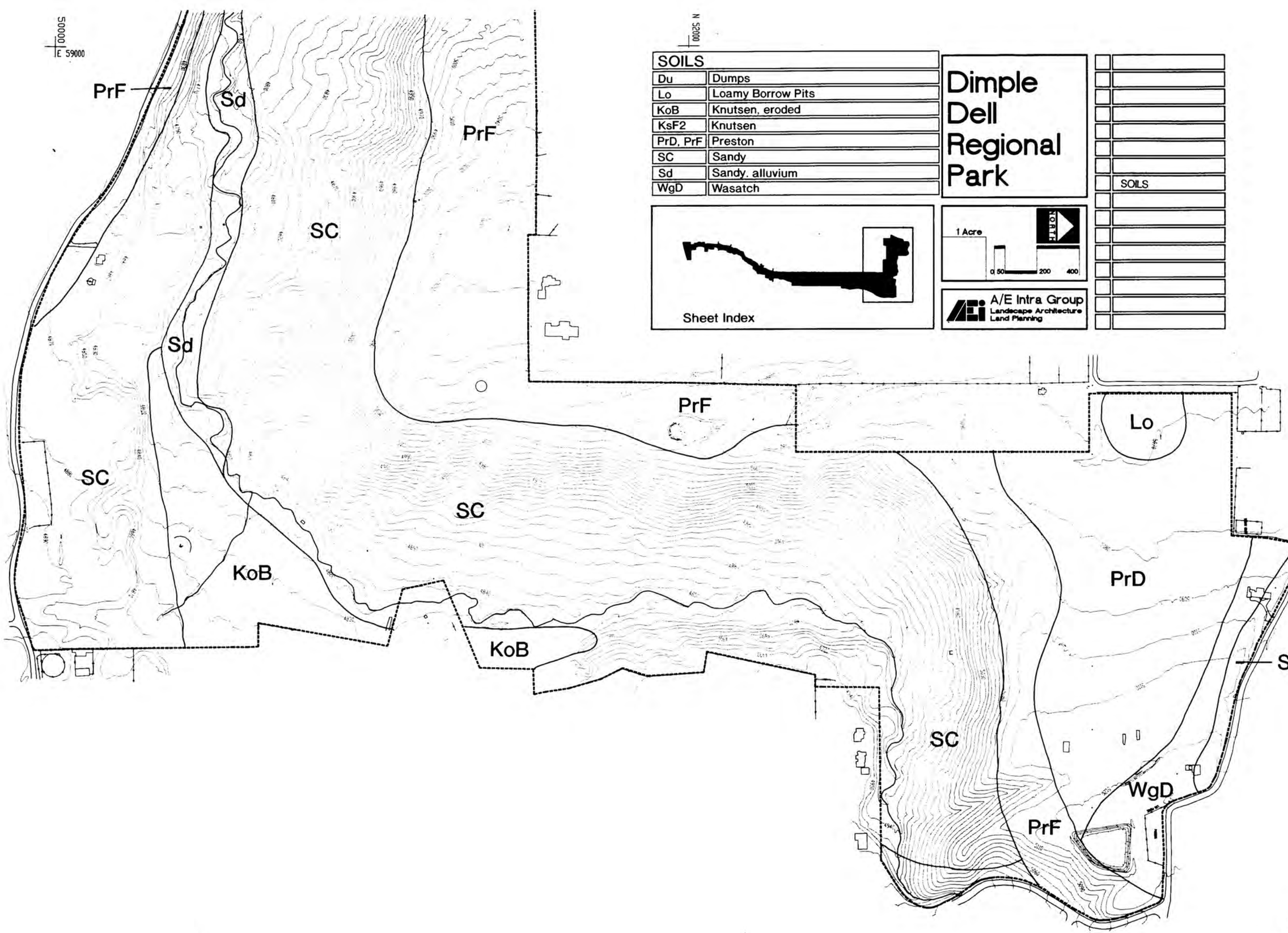
SOILS

Map 3.08.3


S0000
E 59000
N 52000
PrF
Sd
SC
PrF
Sd
PrF
Lo
SC
SC
KoB
KoB
PrD
SC
SC
WgD
PrF
SOILS
Du Dumps
Lo Loamy Borrow Pits
KoB Knutsen, eroded
KsF2 Knutsen
PrD, PrF Preston
SC Sandy
Sd Sandy, alluvium
WgD Wasatch
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SOILS

Map 3.08.4

3.09 UTILITIES

Inventorying the utility systems which exist in and around Dimple Dell Regional Park has helped to identify the utilities that exist near proposed park facilities. Whenever excavation or installation of a utility system has occurred within the park, long-term damage to the environment has been the result.

SALT LAKE AQUEDUCT - A culinary water pipe 48" in size crossing the park at approximately 2500 East. Salt Lake County has a written agreement with the Salt Lake City Metropolitan Water District to use surplus water. Salt Lake County is not considered to be a primary user of this water source.

ELECTRICITY - Single phase electricity is available in all locations surrounding the park. Only three phase power has been shown on the inventory maps since it will be the phase of power necessary for development inside the park.

STORM SEWER - Salt Lake County Flood Control currently uses Dry Creek as a collection drainage for excess storm runoff from Bells Canyon and surrounding urban developments.. Several outlet pipes are shown on the Utility Inventory Maps locating where storm water enters the park.

SANITARY SEWER - Two Sanitary Sewer Districts have jurisdictional control of the existing sanitary sewer systems that exist in the area of Dimple Dell Park. The feasibility of connecting into either of these two systems is good, since it is not anticipated that usage in the park would be measurably great. Sewer lines and manhole locations have been located on the Inventory Maps.

NATURAL GAS - This utility can be found in easements along streets and roads surrounding the entire park. In one location, a natural gas line crosses the park.

CULINARY WATER - Water lines are accessible from streets surrounding the park. Only one culinary water line is known to cross the site. It is located next to the Salt Lake Aqueduct and is 16" in size. Several different water companies serve the adjacent land uses around the park. These companies and their respective service areas have been noted on the inventory maps. White City owns and operates several wells for culinary consumption in the Dry Creek Drainage.

Information Resources:

Information identified on the Utility Inventory Maps have been gathered from the following sources:

1) Salt Lake Aqueduct - Bureau of Reclamation (As-built drawings)

2) Electricity - Utah Power & Light Co. (As-built drawings)

3) Storm Sewer - Salt Lake County Flood Control & Water Quality (As-built drawings)

4) Sanitary Sewer - Sandy Suburban Improvement District (As-built drawings)
Salt Lake County Cottonwood Sanitary District (As-built drawings)

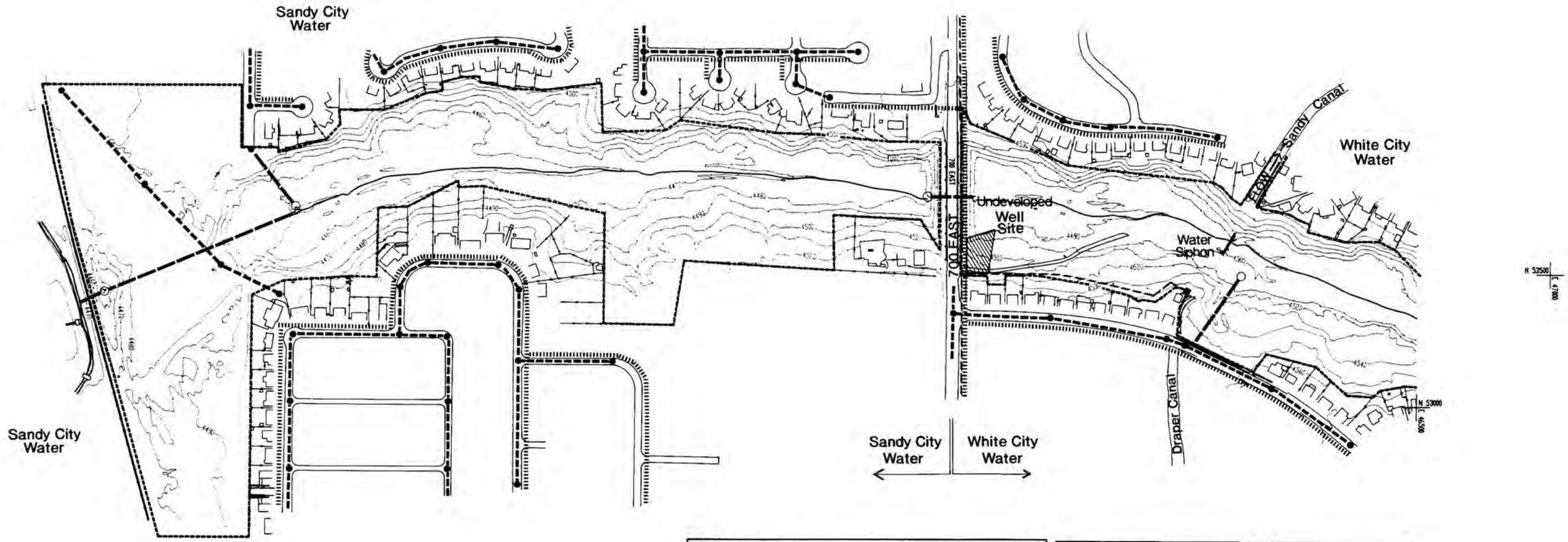
5) Natural Gas - Mountain Fuel Supply Company (GIS Mapping As-built drawings)

6) Culinary Water - Sandy City Department of Public Works (GIS Mapping of local water districts)
White City water department.

UTILITIES 3.09

MAP 3.09.1
MAP 3.09.2
MAP 3.09.3
MAP 3.09.4

R E S O U R C E I N V E N T O R Y



UTILITIES

- Culinary Water
- Sanitary Sewer
- Storm Sewer / Outlet
- Electricity 3-Phase
- Natural Gas
- Secondary Water / Well Site
- Manhole

Dimple Dell Regional Park

Sheet Index

1 Acre

NORTH

0 50 200 400

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UTILITIES

Map 3.09.1

Dimple Dell Regional Park

UTILITIES

	Culinary Water Service Area
	Sanitary Sewer
	Storm Sewer/Outlet
	Electricity 3-Phase
	Natural Gas
	Secondary Water / Well Site
	Manhole
	Lighting

Sheet Index

1 Acre

NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning

UTILITIES

Power Line

White City Water

Well Site Developed

Developed Well Site

Undeveloped Well Site

White City Water

White City Water

White City Water

Sandy City Water

Sandy City Water

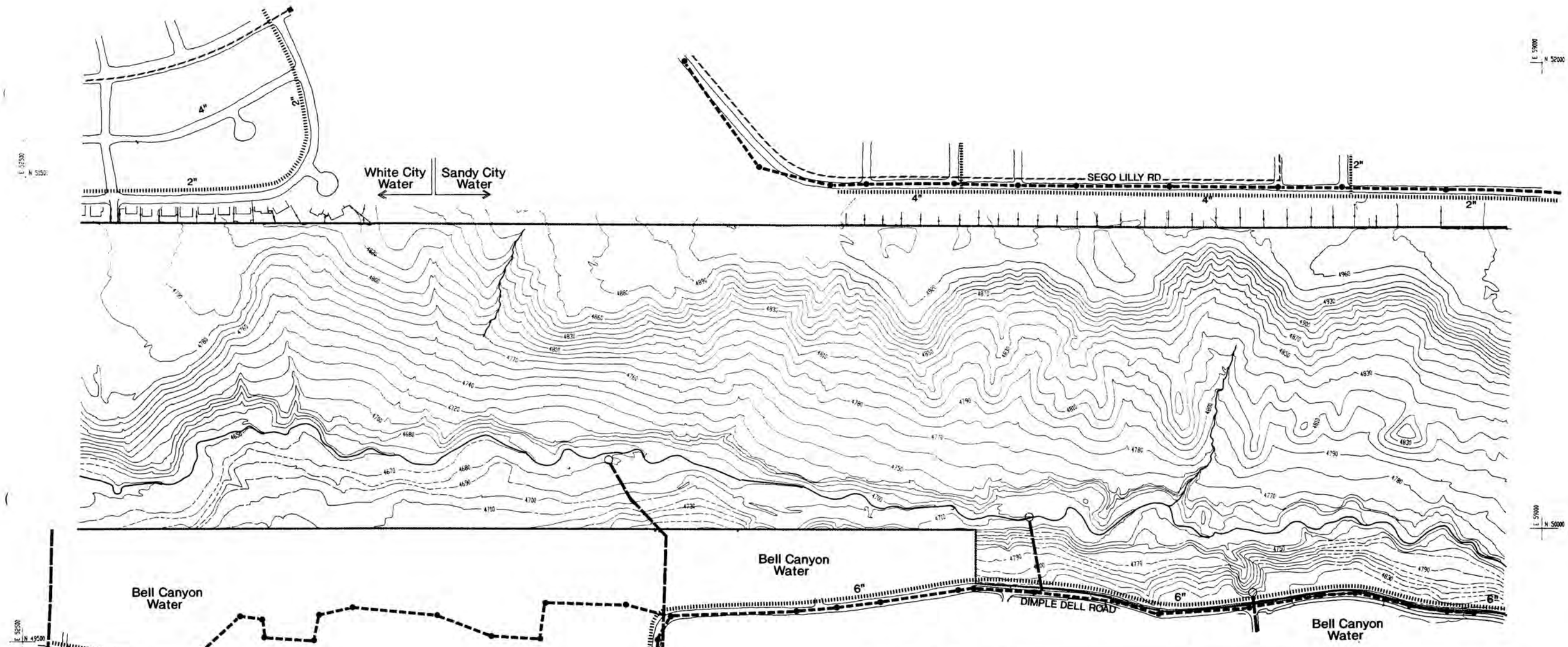
Bell Canyon Water

Undeveloped Well Site

Undeveloped Well Site

1800 EAST

Map 3.09.2



UTILITIES	
	Culinary Water
	Sanitary Sewer
	Storm Sewer / Outlet
	Electricity 3-Phase
	Natural Gas
	Secondary Water
	Manhole

Dimple Dell Regional Park

Sheet Index

1 Acre

NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning

UTILITIES

Map 3.09.3

N 60000
E 59000

N 62500

Bell Canyon Water

Water Tank

Pump House

3-Phase

6"

6"

6"

Bell Canyon Water

Bell Canyon Water

Sandy City Water

North Dry Creek Water

North Dry Creek Water

Salt Lake County Cottonwood Sanitary Sewer District

Sandy Suburban Improvement District Sanitary Sewer System

Map 3.09.4

UTILITIES

- Salt Lake Aquaduct
- Culinary Water
- Sanitary Sewer
- Storm Sewer / Outlet
- Electricity 3-Phase
- Natural Gas
- Secondary Water
- Manhole / Vent

Dimple Dell Regional Park

Sheet Index

1 Acre

NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning

UTILITIES

3.10 VEGETATION

Vegetation coverage is highly variable from one area of the park to another. Shrub coverage varies from 30 to 50 percent and as high as 100 percent in other areas. Likewise, the graminoid and herbaceous groundcover is highly variable ranging from 20 percent to as high as 90 percent. There is also a considerable amount of weedy exotic species throughout much of the park. (Biowest 1989)

The remnant community type occurring within the Dimple Dell corridor may represent the last extensive stand of foothill grassland remaining on public land in the Salt Lake Valley (Harrison 1989).

Riparian vegetation occurs in a 50 to 100-foot band in the Dry Creek stream corridor. Riparian vegetation ranges from 70 to 100 percent along Dry Creek corridor with discontinuous areas along the streambed. The riparian corridor along Dry Creek is one of the most important wildlife habitat zones within the park. Its presences adds to the species diversity, biotic richness and biological productivity of the drainage corridor. The dense cover and tiered canopy of the riparian zone, provides extensive nesting opportunities for avifauna, a variety of niches for insects that sustain many of the nesting avian species, and diurnal and movement cover for mammals.

Dry Creek is an intermittent drainage without free flowing water for most of the year; however, subterranean flows maintain the vegetative complex.

The revegetation potential of soils in the park ranges from poor to good. Most of the disturbed areas in the park have poor revegetation potentials due to the high coarse fragment content and subsequently poor water holding capacities, and low fertility. These conditions, combined with the relatively high soil erosion hazard, make revegetation of disturbed sites difficult. State-of-the-art erosion control treatments combined with revegetation with appropriate native species, will be necessary for successful revegetation of disturbed areas.

The following seven plant communities have been shown on the Vegetation Inventory Maps. Plant communities range from upper story deciduous tree groves located in the Dry Creek stream corridor, to scattered shrub and native bunchgrass communities on the south facing hillsides, to disturbed areas that are void of any vegetation.

UPPER STORY DECIDUOUS GROVES - Vegetation along the Dry Creek streambed consists of Narrow Leaf Cottonwood, Peach Leaf Willow, Red Osier Dogwood, Sandbar Willow, Water Birch, and Black Hawthorne.

MEDIUM STORY TREE - Vegetation located along the bottom of the Dry Creek corridor and on the north facing slope consists of dense medium story trees. The trees in this community consist primarily of Gamble's Oak, Choke Cherry, and Black Hawthorn.

LOWER STORY TREE AND SHRUB, SCATTERED - A plant community that covers a majority of the site consists of scattered groupings of small trees, shrubs and grasses. The small tree which is characteristic of this community is Gambel's Oak. The shrubs of this community are Squaw Bush, Big Sagebrush, Rabbit Brush, Golden Current, Antelope Bitterbrush, and Chokecherry.

SHRUB AND GRASSES - This community is characterized by the non-existence of trees. The shrubs of this community include Squaw Bush, Big Sagebrush, Rabbit Brush, Golden Current, Antelope Bitterbrush, and Chokecherry, Fourwing Saltbush, Sandbar Willow, Woods rose, Oregon Grape, Red Osier Dogwood, and Baltic Rush.

GRASSES - Occasionally there are areas inside the park where the only plant materials present are grasses. The grasses identified in this category are considered to be native to the Dry Creek drainage and have the most stabilizing effect on the site. These grasses are: Western Wheatgrass, Bluebunch Wheatgrass, Indian Ricegrass, Needle-and-Thread, Sandberg Bluegrass and Sand Dropseed.

DISTURBED SITE/WEEDY GRASSES - The first vegetation that inhabits a site following a disturbance are the introduced annual grasses. Consisting primarily of Annual Cheat Grass and Annual Rye Grass, these species are very competitive and aggressive. These introduced grass species become fire fuels when they dry-out, which is an extreme hazardous for the park and also adjacent residences.

HISTORIC AGRICULTURAL ORCHARDS - Identifies remnant fruit trees from the historic farm site.

Several species of wildflowers exist throughout the site. Species that have been identified on the site are Cat's Eye, Nelson's Larkspur, Utah Locoweed, Longleaf Phlox, Daisey Fleabane, Wild Onion, Fragile Prickly Pear, Sego Lily, Death Camas, Bedstraw, Sand Verbena, Scarlet Gilia, Pale Evening Primrose, Hairy Goldenaster, Blazing Star, Sticky Gum Plant, False Solomanseal, Heronsbill, Mules Ear and Yarrow. Wildflowers have not been identified in any specific community due to their wide spread presence. Mountain Mahogany is another plant material that is not listed in any specific plant community. It exists sporadically throughout the park.

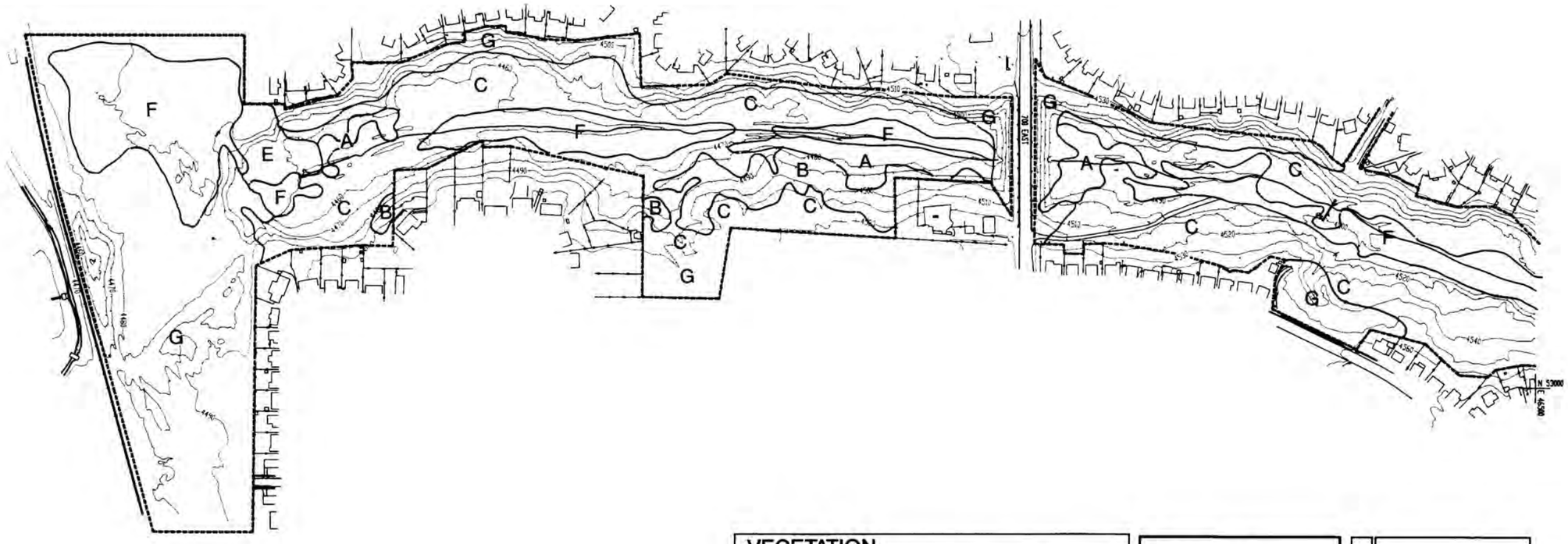
Information Resources:

The information identified in this map was taken from color aerial photography and site reconnaissance.

VEGETATION 3.10

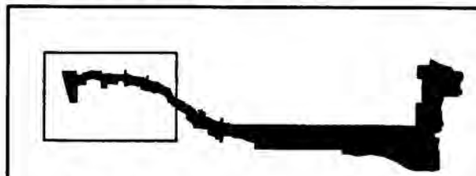
MAP 3.10.1
MAP 3.10.2
MAP 3.10.3
MAP 3.10.4

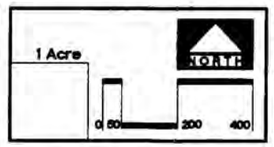
R E S O U R C E I N V E N T O R Y



VEGETATION	
A	Upper Story Deciduous Groves
B	Medium Story Tree Massing
C	Lower Story Tree and Shrub, Scattered
D	Shrub and Grasses
E	Grasses
F	Barren Ground
G	Disturbed Site/Weedy Grasses
H	Historic Agricultural Orchard

Dimple Dell Regional Park

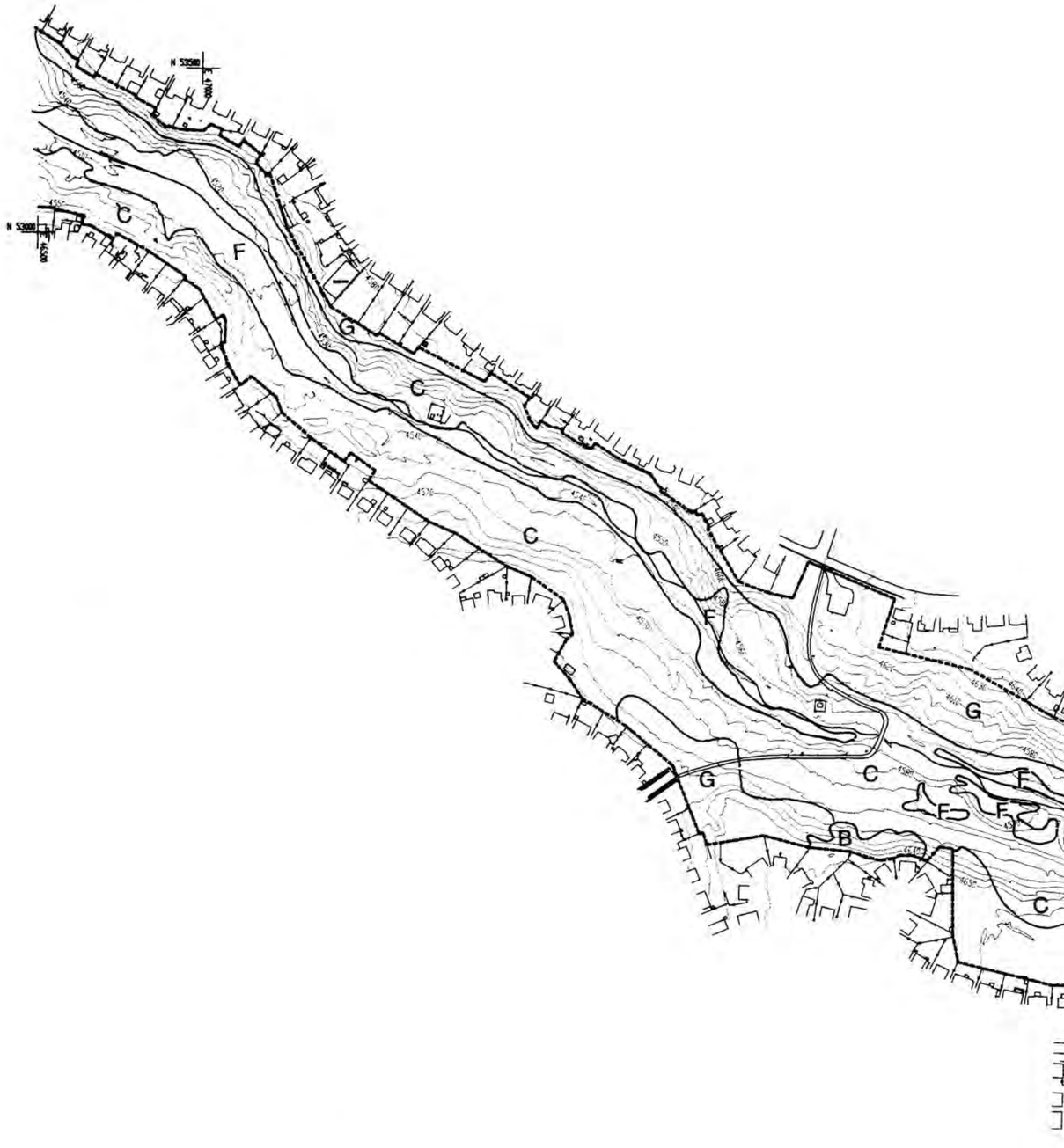




A/E Intra Group
Landscape Architecture
Land Planning

VEGETATION

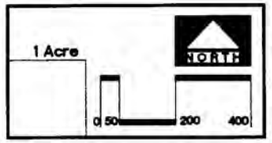
Map 3.10.1



VEGETATION	
A	Upper Story Deciduous Groves
B	Medium Story Tree Massing
C	Lower Story Tree and Shrub, Scattered
D	Shrub and Grasses
E	Grasses
F	Barren Ground
G	Disturbed Site/Weedy Grasses
H	Historic Agricultural Orchard

Dimple Dell Regional Park

Sheet Index



A/E Intra Group
Landscape Architecture
Land Planning

VEGETATION

Map 3.10.2

E 52500
N 51500

E 53000
N 52000

E 52500
N 49500

E 53000
N 50000

VEGETATION	
A	Upper Story Deciduous Groves
B	Medium Story Tree Massing
C	Lower Story Tree and Shrub, Scattered
D	Shrub and Grasses
E	Grasses
F	Barren Ground
G	Disturbed Site/Weedy Grasses
H	Historic Agricultural Orcahrd

Sheet Index

Dimple Dell Regional Park

1 Acre

NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning

VEGETATION

Map 3.10.3

Dimple Dell Regional Park

VEGETATION	
A	Upper Story Deciduous Groves
B	Medium Story Tree Massing
C	Lower Story Tree and Shrub, Scattered
D	Shrub and Grasses
E	Grasses
F	Barren Ground
G	Disturbed Site/Weedy Grasses
H	Historic Agricultural Orchard

Sheet Index

1 Acre

NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning

VEGETATION

Map 3.10.4

3.11 WILDLIFE

Dimple Dell Regional Park provides an island of wildlife habitat within an urban environment. The undeveloped Dry Creek floodplain and adjacent uplands extend west from the mouth of Bells Canyon through sandy bench terraces to the eastern border of the Salt Lake Valley. In addition to supporting an indigenous wildlife community, the Dry Creek drainage functions as a movement and dispersion corridor for several mammalian species and numerous avian species due to its contiguous linkage to the foothills and forest lands of the wasatch front.

The shrub habitat, dominated by Gambel's Oak, antelope bitterbrush and sagebrush, is well developed throughout the Dry Creek drainage. Clumps of shrubs are evenly distributed over the foothill grasslands providing abundant cover and browse for mammals; and nesting habitat cover and food for avifauna.

A well developed riparian zone exists throughout the course of Dry Creek within the Park. Riparian vegetation is one of the most important wildlife habitat types in northern Utah having a high species diversity, biotic richness and biological productivity. The dense cover and tiered canopy of the riparian zone provides extensive nesting opportunities for avifauna, a variety of niches for insects that sustain many of the nesting avian species, and diurnal and movement cover for mammals. Dry Creek is an intermittent drainage without free flowing water for most of the year; however, subterranean flows maintain a vegetative complex that provides a water source for many wildlife species. The interspersion of riparian habitat with the upland shrub and grassland habitat increases the biotic richness of the entire area. The proximity of these habitats increases available habitat components for the local wildlife community.

Wildlife residents and migrants of Dimple Dell Regional Park:

Birds:
Waterfowl - Mallard; **Eagles/Hawks** - Golden Eagle, Sharp-shinned Hawk, Cooper's Hawk, Red-tailed Hawk, American Kestrel; **Grouse, Quail** - Ring-necked Pheasant, California Quail; **Shorebirds, Gulls** - Killdeer; **Doves** - Mourning Dove; **Owls** - Western Screech Owl, Great Horned Owl; **Cuckoos** - Yellow-billed Cuckoo; **Hummingbirds** - Black-chinned Hummingbird; **Kingfisher** - Belted Kingfisher; **Woodpeckers** - Lewis' Woodpecker, Red-naped Sapsucker, Downy Woodpecker, Hairy Woodpecker, Northern Flicker; **Flycatchers** - Dusky Flycatcher, Western Kingbird; **Swallows** - No Rough-winged Swallow, Cliff Swallow, Barn Swallow; **Jays/Crows** - Scrub Jay, Black-billed Magpie; **Titmice** - Black-capped Chickadee; **Nuthatches** - Red-breasted Nuthatch; **Wrens** - Rock Wren, House Wren; **Kinglets/Thrushes** - Ruby-crowned Kinglet, Blue-gray Gnatcatcher, American Robin; **Starlings** - European Starling; **Vireos** - Solitary Vireo, Warbling Vireo; **Warblers/Tanagers/Sparrows/Blackbirds** - Virginia's Warbler, Yellow Warbler, MacGillivary's Warbler, Western Tanager, Black-headed Grosbeak, Green-tailed Towhee, Rufous-sided Towhee, Song Sparrow, Western Meadowlark, Brewer's Blackbird, Lazuli Bunting, Northern Oriole; **Finches** - House Finch, American Goldfinch; **Weaver Finches** - House Sparrow,

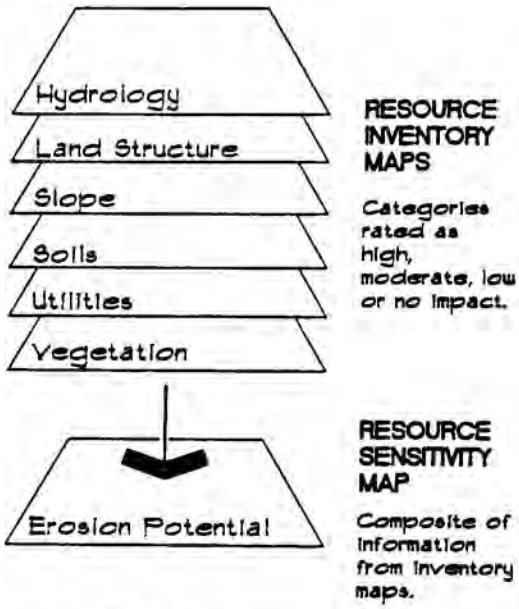
Mammals:
Racoon, Striped Skunk, Valley Pocket Gopher, Porcupine, Red Fox, Desert Cottontail, Mule Deer, Deer Mouse, Black-tailed Jackrabbit, Botta's Pocket Gopher, Uinta Ground Squirrel, (occassional) - Cougar, Bob Cat.

Reptiles:
Sagebrush Lizard, Western Lizard, Western Garter Snake, Woodhouse's Toad, Rattle Snake, Green Snake.

Wildlife Refuge Zones:
Environmental disturbances inside the park have long-range effects for wildlife populations. Sensitive wildlife habitats need to be identified and zones of protection created. Dimple Dell offers quality wildlife viewing for nature enthusiasts and a natural environment that affords educational opportunities for the public.

RESOURCE SENSITIVITY SECTION 4

Resource Sensitivity is defined as an analysis of development impact, based on existing site characteristics. The analysis presented in the following sensitivity maps represents information that was formulated through overlaying the Resource Inventory Maps. The process involved overlaying a series of inventory maps which were specifically related to the sensitivity being evaluated. For example, the inventory maps for Hydrology, Land Structure, Slope, Soils, Utilities, and Vegetation were used in developing the Erosion Potential Sensitivity Map. Site characteristics of each inventory map were rated as having either high, moderate, low, or no potential for erosion. The information was then combined to produce a composite sensitivity map identifying areas of high, moderate, low, or no condition of erosion potential.



Information taken from the Resource Inventory maps is objective 'raw' data. This data was evaluated to determine the extent of site and environmental disturbances. Site investigations were conducted when information on the inventory maps was unclear.

The result of overlaying the inventory maps is a set of maps that identify areas of the park that are sensitive to various conditions. Following is a brief description of the Resource Sensitivity Maps. Refer to the detailed explanation at the beginning of each set of maps for a description and reason for that sensitivity map, the resource inventory maps used to create each sensitivity map, and an outline of the inventory map characteristic rankings.

Compatibility to High Activity, Structures, or Trails identifies areas of the park that are compatible to the indicated activity to a varying degree.

Areas of Interest identifies areas of the park that contain characteristics that will offer the park visitor an interesting experience to varying degrees.

Erosion Potential identifies areas of the park that have varying levels of erosion potential.

Impacts to Wildlife identifies areas of the park that have varying levels of impact to the native wildlife of the park.

Off Site Impacts identifies areas of the park that are impacted to varying degrees by land uses outside the park.

Stream Alignment Stability identifies areas of the stream corridor that are stable to varying degrees.

When activities are proposed to be incorporated into the park, these maps are to be consulted to assist locating and implementing the activity. What will be identified when these maps are consulted is the extent to which the park will be impacted and what mitigation may be required to implement the activity.

4.01 COMPATIBILITY TO HIGH ACTIVITY

As a part of the Dimple Dell Regional Park there will be areas with high levels of activity and areas with low levels of activity. Areas of low level activities will be spread throughout the park. These activities will include walking, cycling, or horseback riding trails, small group picnic areas, or observing points. In other areas of the park there will be facilities supporting high levels of activity. Some of these activities will be large group picnic facility, equestrian staging area, sport field complex, nature interpretive area, trail head, amphitheater, and water feature. To identify the areas where these high use activities are best suited a COMPATIBILITY TO HIGH ACTIVITY map has been prepared.

To create the Compatibility to High Activity map the inventory maps that were used were: Land Structure, Land Use, Slope, and Vegetation.

The following is an outline for the ranking of the level of compatibility assigned to each inventory map category:

HIGH COMPATIBILITY

3.04	Land Structure	Terrace / Promontory
3.05	Land Use	Defined Public Access / Defined Trail Head
3.07	Slope	0 to 5%
3.10	Vegetation	Lower Story Trees and Shrubs, Scattered / Shrubs and Grasses / Grasses / Barren Ground / Disturbed Site/Weedy Grasses

MODERATE COMPATIBILITY

3.05	Land Use	Undefined Public Access
3.07	Slope	5 to 15%

LOW COMPATIBILITY

3.04	Land Structure	Stream Bed / Wash / Escarpment
3.07	Slope	15% to 30% / 30%+
3.10	Vegetation	Upper Story Deciduous Groves / Medium Story Tree Massing

OVERLAY

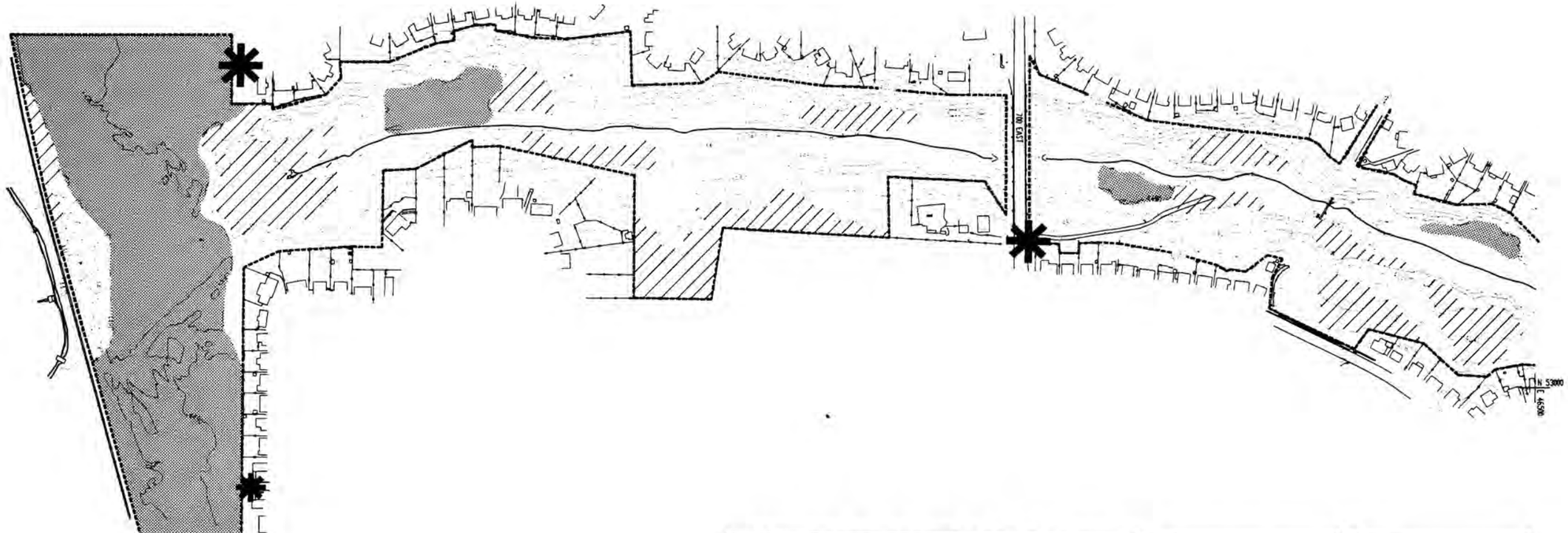
An overlay of historical and archaeological areas, historical sites, major and secondary access points have been identified to guide the development of future activity areas.

It should be noted that there are some areas in the park that are wildlife habitat areas, such as fox dens. Prior to any activity implementation a close study of the proposed impact area must be conducted to identify what, if any mitigation needs to be implemented as it relates to wildlife habitat.

COMPATIBILITY TO HIGH ACTIVITY 4.01

MAP 4.01.1
MAP 4.01.2
MAP 4.01.3
MAP 4.01.4

R E S O U R C E S E N S I T I V I T Y



COMPATIBILITY TO HIGH ACTIVITY
High Compatibility
Moderate Compatibility
Low Compatibiliby
Historical / Archaelogical Area
Historical Site
Major Access
Secondary Access

Dimple Dell Regional Park

Sheet Index

1 Acre

NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning

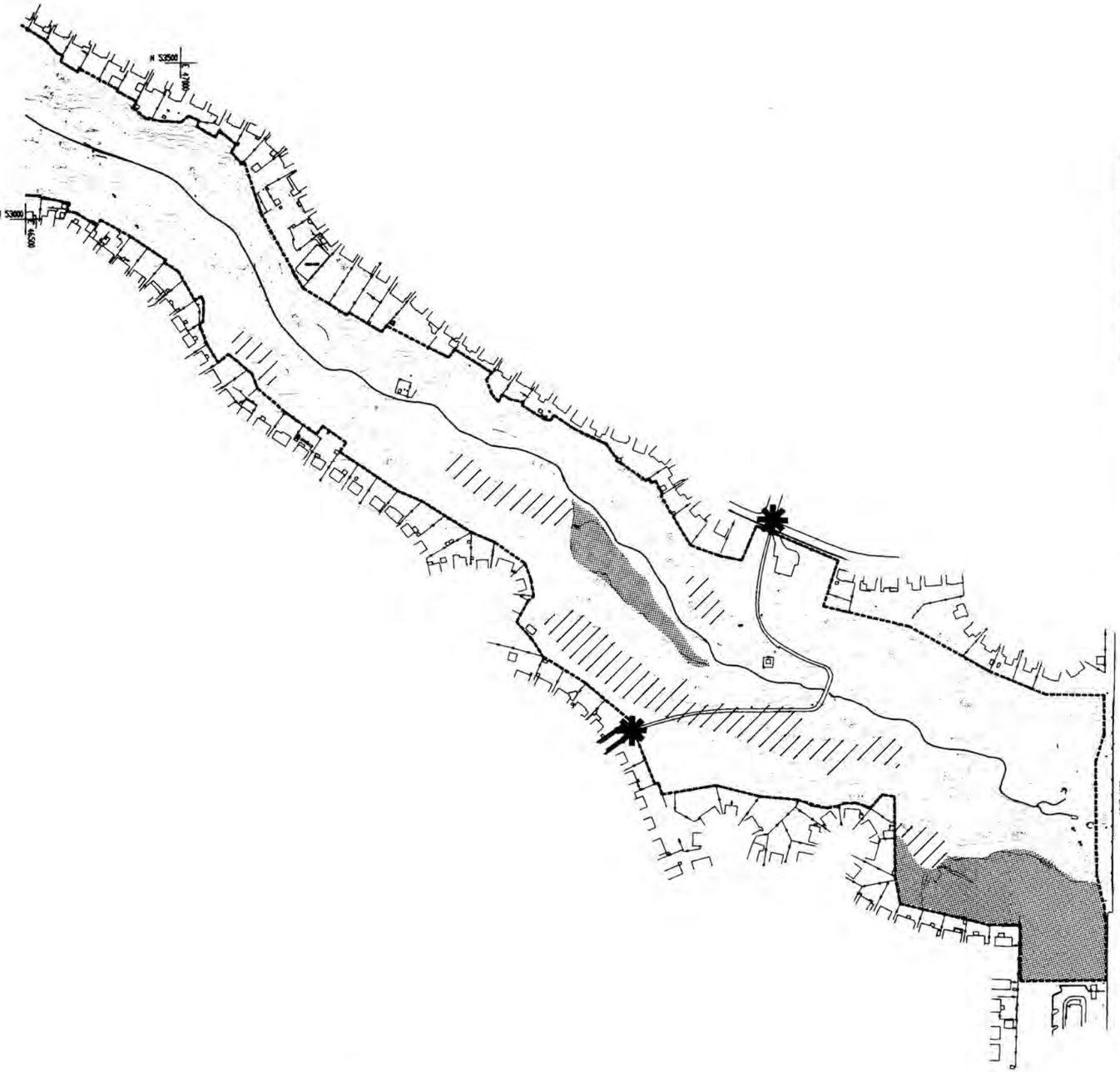
- LAND STRUCTURE
- LAND USE
- SLOPE
- VEGETATION

Map 4.01.1

COMPATIBILITY TO HIGH ACTIVITY	
	High Compatibility
	Moderate Compatibility
	Low Compatibiliby
	Historical / Archaelogical Area
●	Historical Site
✱	Major Access
*	Secondary Access

Dimple Dell Regional Park

	LAND STRUCTURE
	LAND USE
	SLOPE
	VEGETATION



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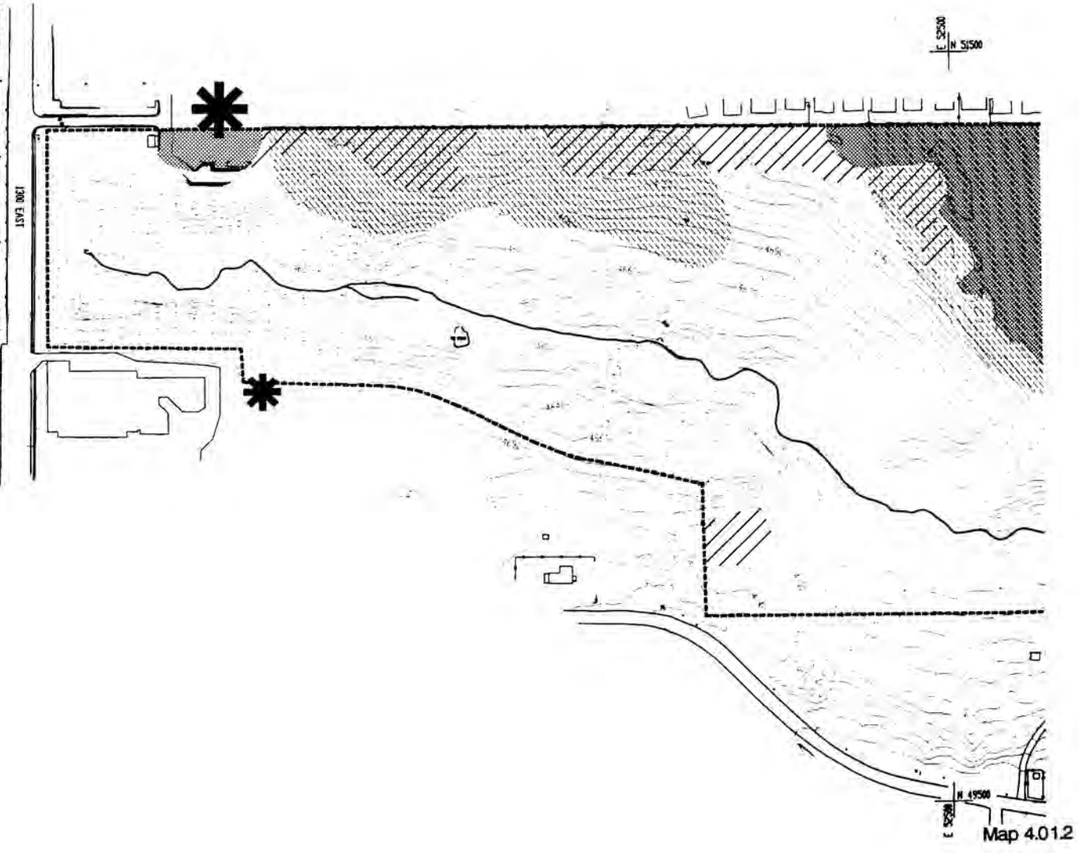
1 Acre

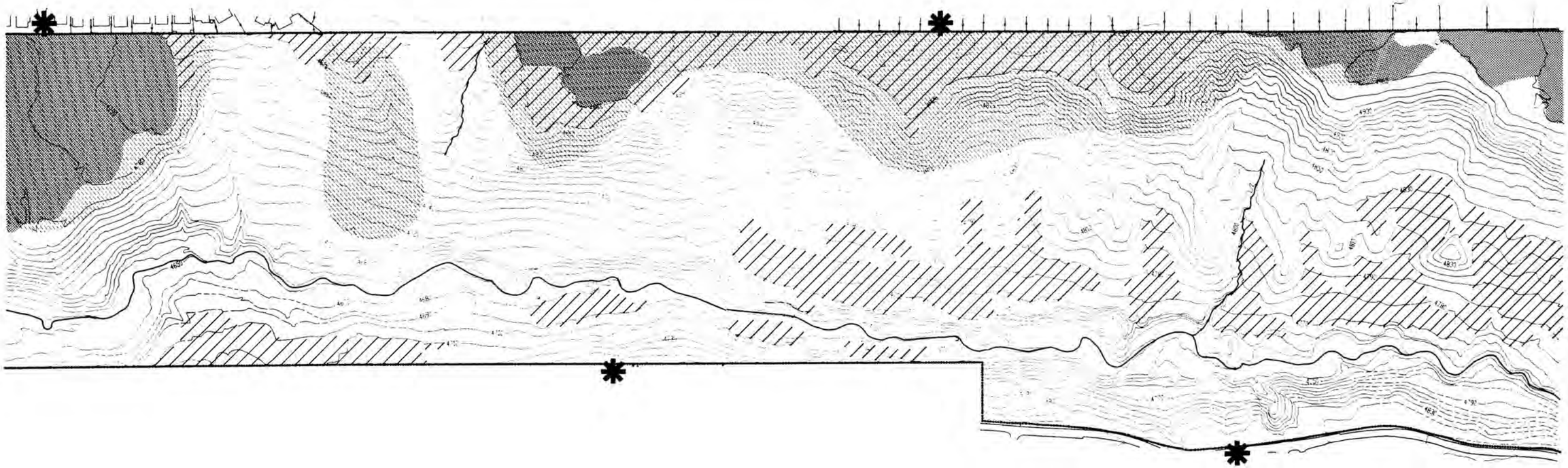
NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning



Map 4.01.2



COMPATIBILITY TO HIGH ACTIVITY	
	High Compatibility
	Moderate Compatibility
	Low Compatibiliby
	Historical / Archaelogical Area
●	Historical Site
✱	Major Access
*	Secondary Access

Dimple Dell Regional Park

	LAND STRUCTURE
	LAND USE
	SLOPE
	VEGETATION

Sheet Index

1 Acre

NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning

Map 4.01.3

E 59000

N 52000

COMPATIBILITY TO HIGH ACTIVITY
High Compatibility
Moderate Compatibility
Low Compatibiliby
Historical / Archaelogical Area
Historical Site
Major Access
Secondary Access

Dimple Dell Regional Park

Sheet Index

1 Acre

NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning

- LAND STRUCTURE
- LAND USE
- SLOPE
- VEGETATION

Map 4.01.4

4.02 COMPATIBILITY TO STRUCTURES

Anticipating the development of recreation related structures such as pavilions, ball fields with concession buildings, maintenance and caretaker buildings, and nature center, the Compatibility to Structures map has been prepared.

Several elements are required to locate a recreational structure. These elements may be present in varying degrees throughout the park. It needs to be recognized that the design and make up of a structure will influence the level of compatibility the site may have for that structure. The classifications of High, Moderate, and Low Compatibility are generic in nature and identify areas within the park that would be compatible to a typical structure.

The inventory maps used to identify the Compatibility to Structures are: Adjacent Land Use, Aesthetics, Land Structure, Land Use, Slope, Soils, and Vegetation.

The following is an outline for the ranking of the level of compatibility assigned to each inventory map categories:

HIGH COMPATIBILITY

3.01	Adjacent Land Uses	Commercial / Abandoned Industrial / Agricultural / Undeveloped / Recreational
3.04	Land Structure	Promontory / Terrace
3.07	Slope	0 to 5%
3.08	Soils	Knudsen / Preston

MODERATE COMPATIBILITY

3.01	Adjacent Land Uses	Utility
3.07	Slope	5% to 15% / 15% to 30%
3.08	Soils	Loamy Borrow Pits / Sandy

LOW COMPATIBILITY

3.01	Adjacent Land Uses	Equestrian Residential / Residential
3.04	Land Structure	Escarpment / Wash
3.07	Slope	30%+
3.08	Soils	Dumps / Sandy Alluvium

OVERLAY

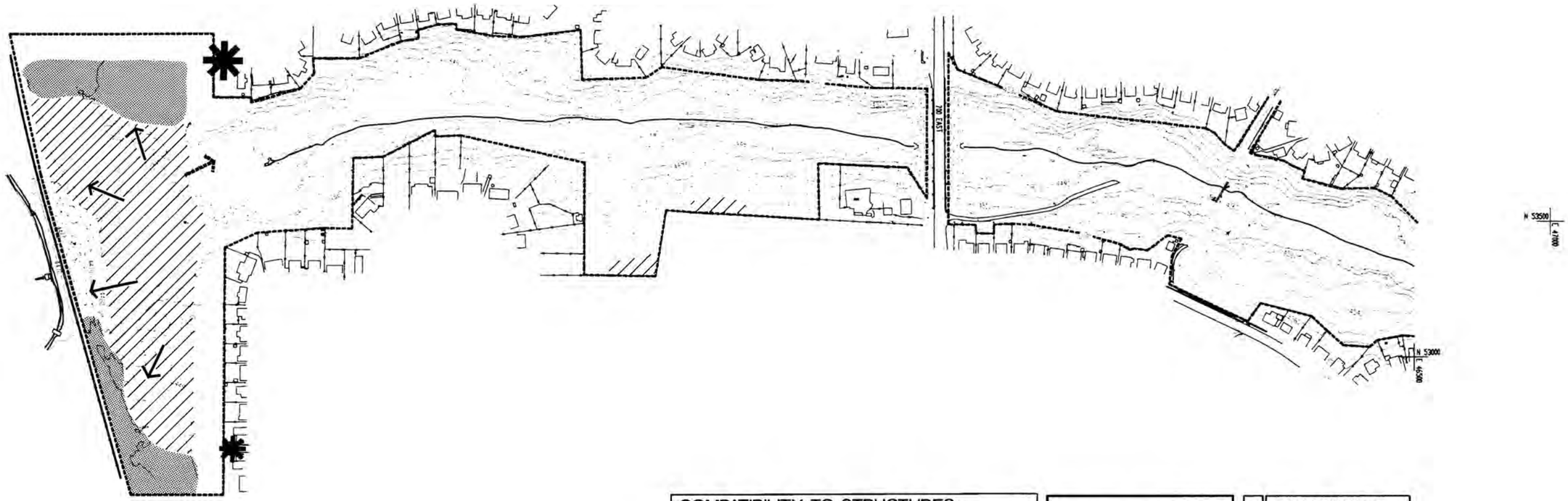
An overlay of historical and archeological locations, historical sites, major and secondary access points, and views have been identified to guide the development of future recreational structures.

It should be noted that some areas along the north rim and in the eastern portion of the park show high compatibility to structures based on the evaluation criteria identified above. However the requirements of 1) close proximity to access points and 2) no structures below the rim (as stated in the mission statement of the Dimple Dell Advisory Board) suggest that structures are not to be considered in these areas.

COMPATIBILITY TO STRUCTURES 4.02

MAP 4.02.1
MAP 4.02.2
MAP 4.02.3
MAP 4.02.4

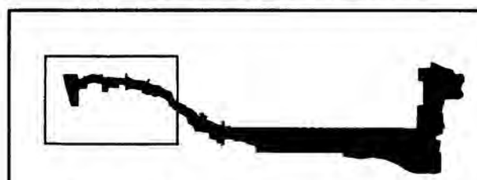
RESOURCE SENSITIVITY

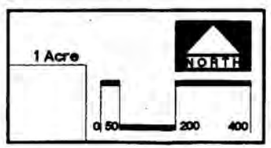


COMPATIBILITY TO STRUCTURES
High Compatibility
Moderate Compatibility
Low Compatibiliby
Historical / Archaelogical Area
Historical Site
Major Access
Secondary Access
Views • beyond park — within park ▪▪▪▪▪

Dimple Dell Regional Park

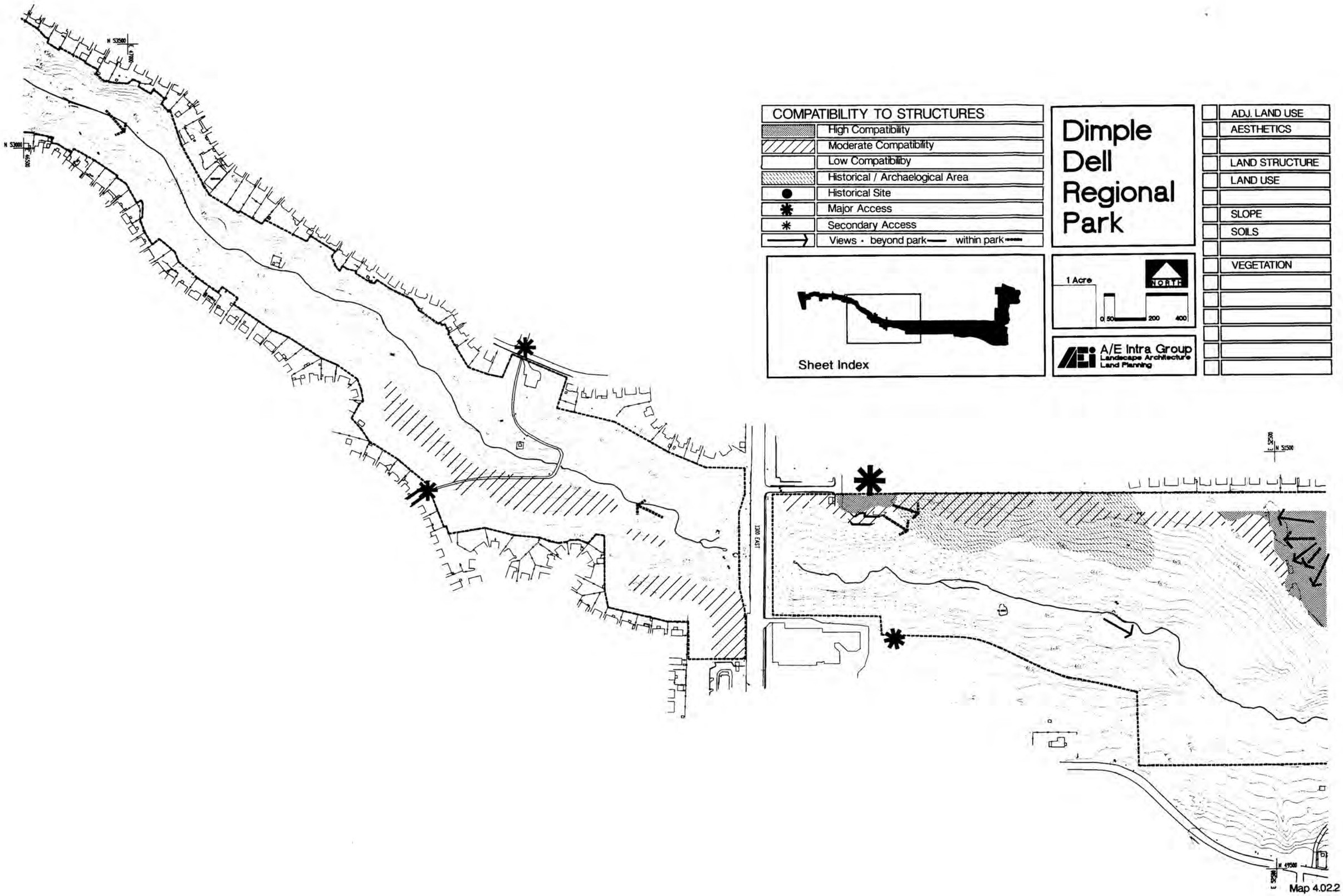
ADJ. LAND USE
AESTHETICS
LAND STRUCTURE
LAND USE
SLOPE
SOILS
VEGETATION





A/E Intra Group
Landscape Architecture
Land Planning

Map 4.02.1



COMPATIBILITY TO STRUCTURES

- High Compatibility
- Moderate Compatibility
- Low Compatibiliby
- Historical / Archaelogical Area
- Historical Site
- Major Access
- Secondary Access
- Views · beyond park — within park

Dimple Dell Regional Park

Sheet Index

1 Acre

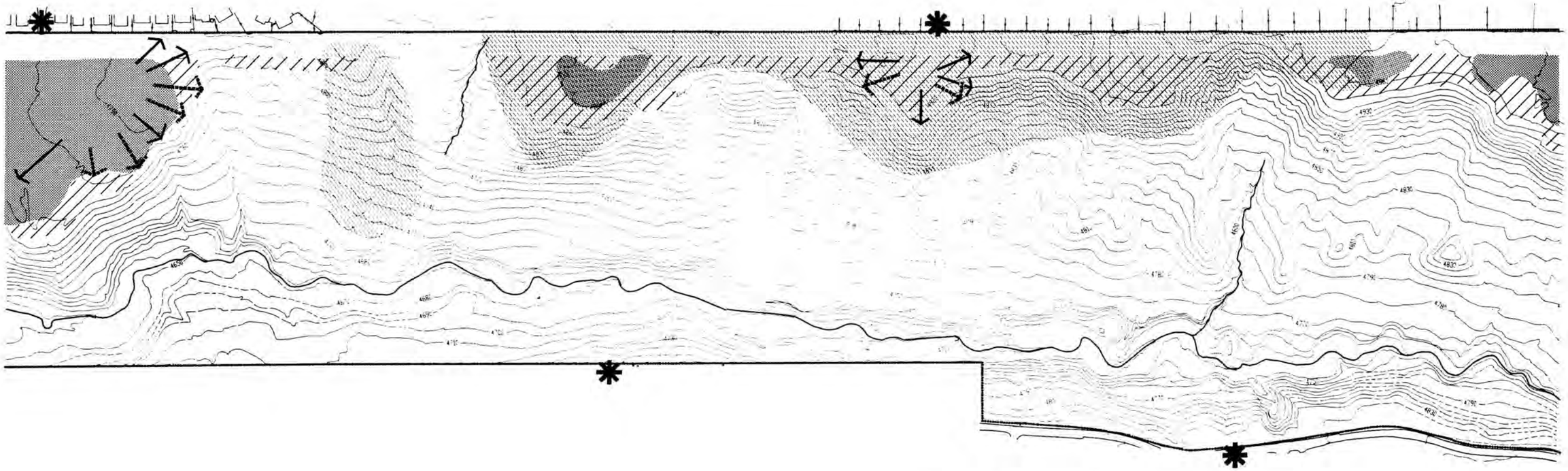
NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning

- ADJ. LAND USE
- AESTHETICS
- LAND STRUCTURE
- LAND USE
- SLOPE
- SOILS
- VEGETATION

Map 4.02.2



COMPATIBILITY TO STRUCTURES

- High Compatibility
- Moderate Compatibility
- Low Compatibiliby
- Historical / Archaelogical Area
- Historical Site
- Major Access
- Secondary Access
- Views • beyond park —— within park ▪▪▪▪▪

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Dimple Dell Regional Park

1 Acre

NORTH

0 50 200 400

A/E Intra Group
Landscape Architecture
Land Planning

- ADJ. LAND USE
- AESTHETICS
- LAND STRUCTURE
- LAND USE
- SLOPE
- SOILS
- VEGETATION

Map 4.02.3

500000 E 59000

N 52000

COMPATIBILITY TO STRUCTURES
High Compatibility
Moderate Compatibility
Low Compatibiliby
Historical / Archaelogical Area
Historical Site
Major Access
Secondary Access
Views · beyond park — within park ▪▪▪▪

Dimple Dell Regional Park

Sheet Index

1 Acre

NORTH

0 50 200 400

A/E Intra Group
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- ADJ. LAND USE
- AESTHETICS
- LAND STRUCTURE
- LAND USE
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- SOILS
- VEGETATION

Map 4.02.4

4.03 COMPATIBILITY TO TRAILS

The hierarchy and network of trails throughout the park have contributed significantly to the destabilization of slopes, stream corridors, and vegetation. Due primarily to the sandy character of the site, trails become like open wounds that struggle to heal once started. Equestrian trails, especially have contributed to the destabilization of the stream corridor, which in turn, has spawned other environmental problems in the park.

The Compatibility to Trails maps identifies areas of the park that are suited for trail development in a greater or lesser degree.

The inventory maps used to identify Compatibility to Trails are Hydrology, Slope, Soils, and Vegetation.

Following is an outline of the categories of the inventory maps used to identify the areas of the park that are compatible to trails:

LOW COMPATIBILITY

3.03	Hydrology*	Primary Drainage / Secondary Drainage (equestrian trails within the stream corridor)
3.07	Slope	30%+
3.08	Soils	Knutsen, eroded / Preston / Sandy
3.10	Vegetation	Barren Ground (including areas of 5% to 30% slope)

MODERATE COMPATIBILITY

3.03	Hydrology*	Primary Drainage / Secondary Drainage (trails near stream corridor)
3.07	Slope	15% to 30%
3.08	Soils	Loamy Borrow Pit / Knutsen / Sandy Alluvium / Wasatch (when disturbed)
3.10	Vegetation	Grasses

HIGH COMPATIBILITY

3.03	Hydrology*	Primary Drainage / Secondary Drainage (far removed from stream corridor)
3.07	Slope	0% to 5% / 5% to 15%
3.08	Soils	Dumps / Wasatch (when undisturbed)
3.10	Vegetation	Upper Story Deciduous Groves / Medium Story Tree Massings / Lower Story Trees and Shrubs / Shrubs and Grasses / Historic Agricultural Orchard

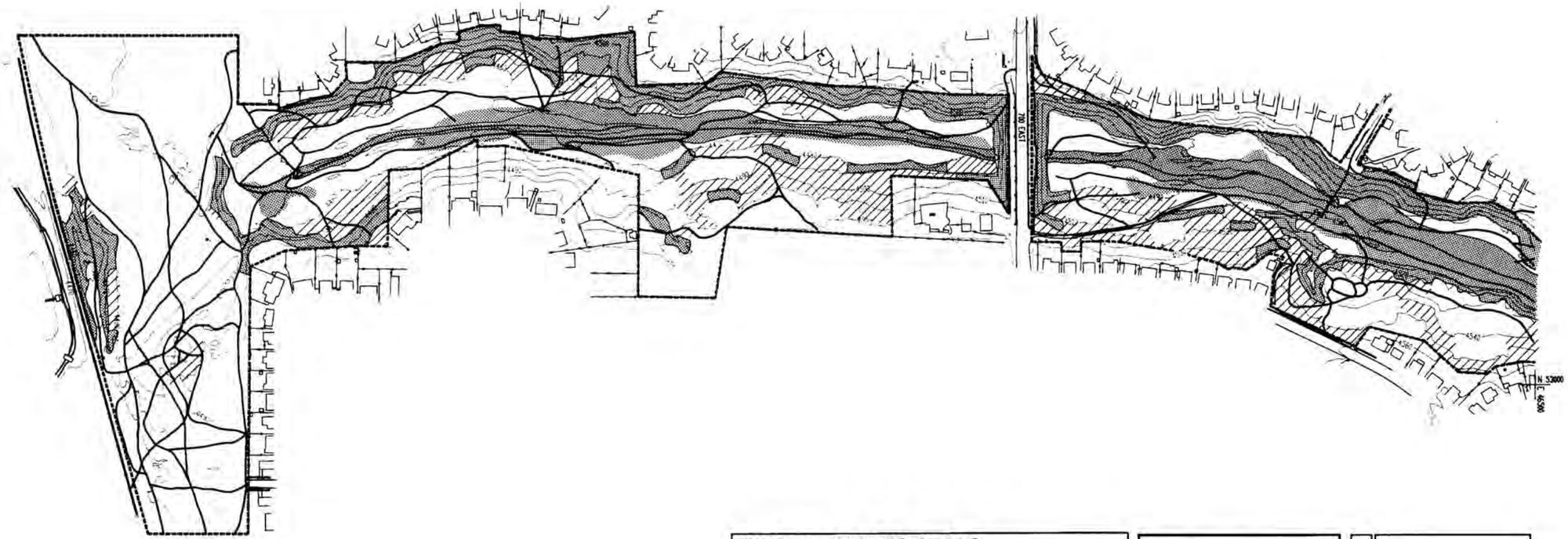
*On site investigation was conducted to determine locations of existing trails in the Primary and Secondary Drainages

Although areas are designated as low compatibility to trails this does not mean trails are to be restricted from this area. What is indicated is that trails in this classification will require extra mitigation efforts.

COMPATIBILITY TO TRAILS 4.03

MAP 4.03.1
MAP 4.03.2
MAP 4.03.3
MAP 4.03.4

R E S O U R C E S E N S I T I V I T Y

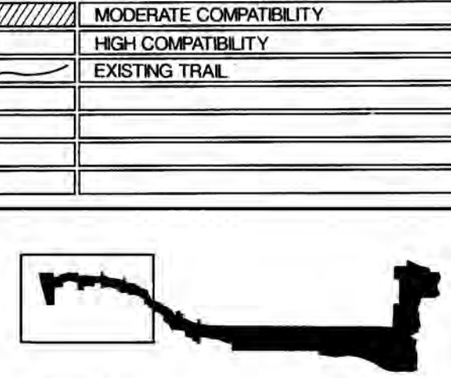


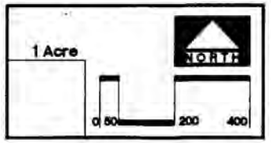
COMPATIBILITY TO TRAILS

- LOW COMPATIBILITY
- MODERATE COMPATIBILITY
- HIGH COMPATIBILITY
- EXISTING TRAIL

Dimple Dell Regional Park

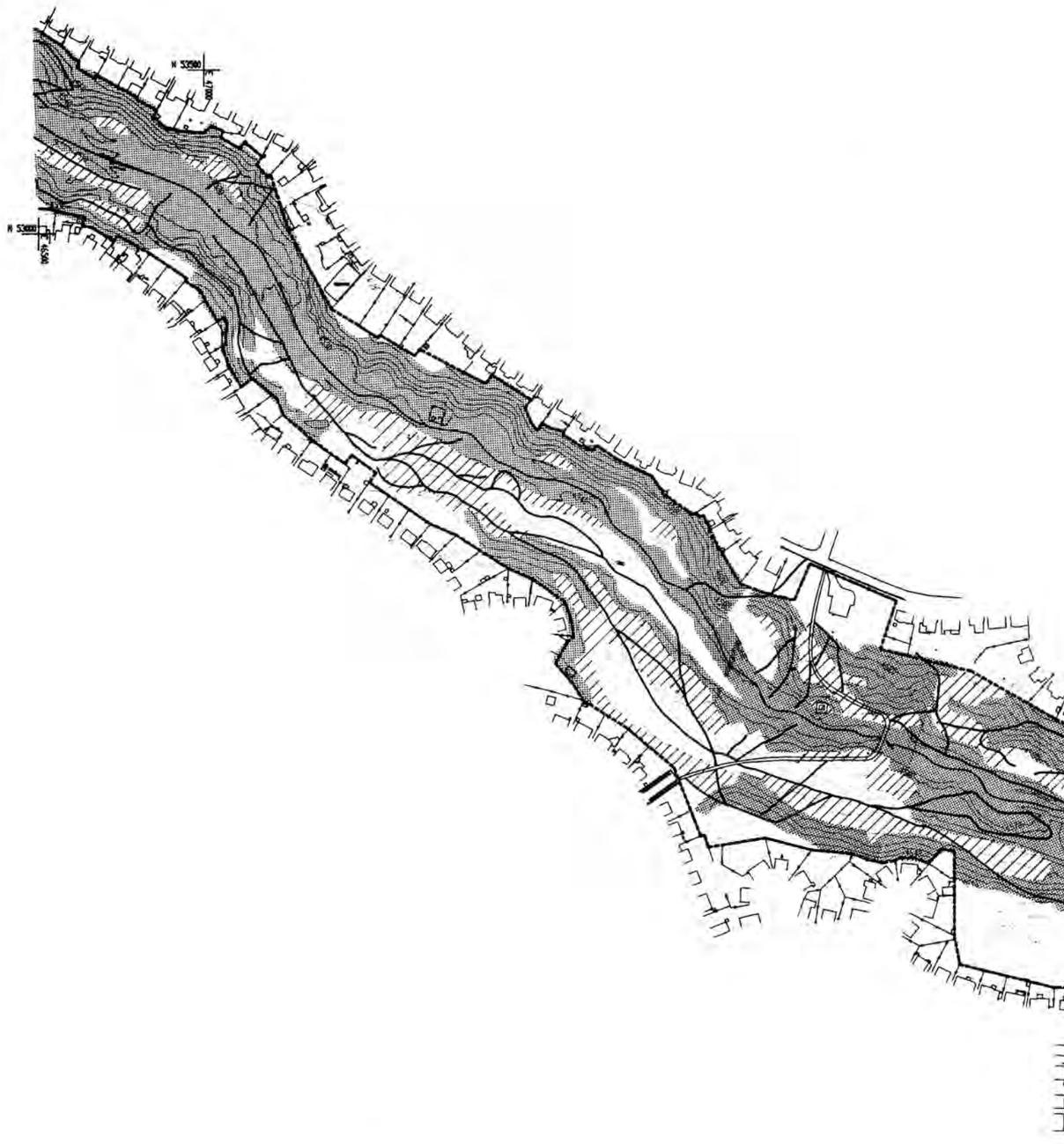
- LAND STRUCTURE
- LAND USE
- SLOPE
- SOILS
- VEGETATION





A/E Intra Group
Landscape Architecture
Land Planning

Map 4.03.1



COMPATIBILITY TO TRAILS

- LOW COMPATIBILITY
- MODERATE COMPATIBILITY
- HIGH COMPATIBILITY
- EXISTING TRAIL

Dimple Dell Regional Park

- LAND STRUCTURE
- LAND USE
- SLOPE
- SOILS
- VEGETATION

Sheet Index

1 Acre

NORTH

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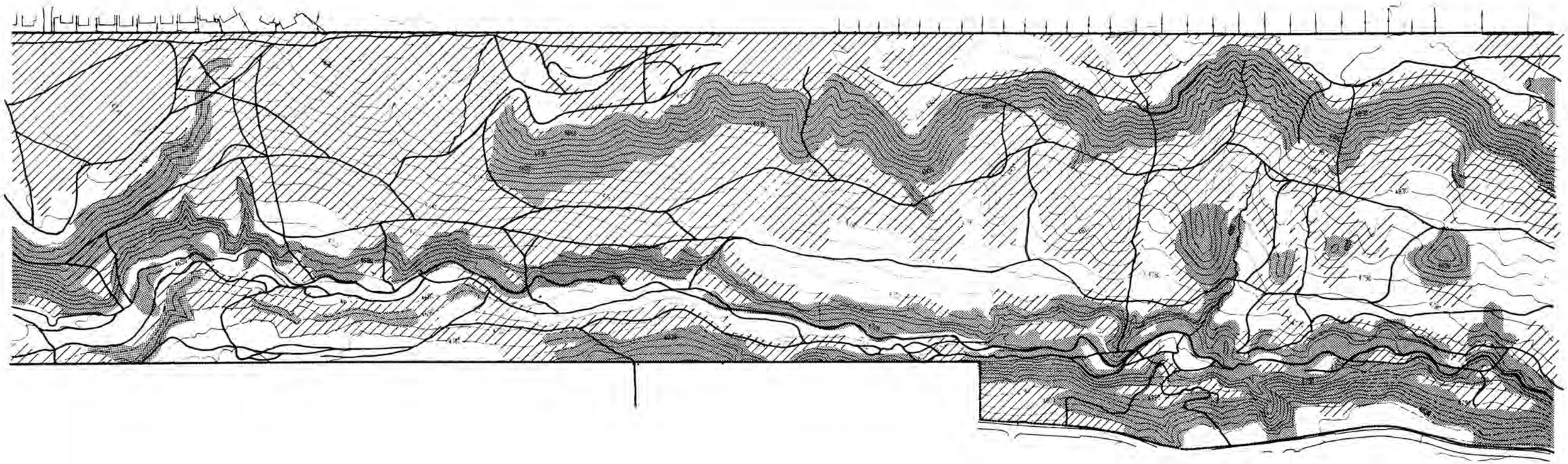
A/E Intra Group
Landscape Architecture
Land Planning

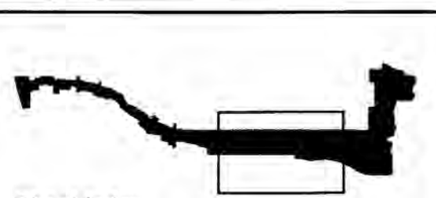
Map 4.03.2

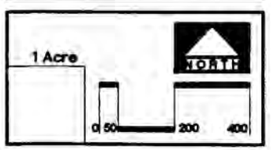


COMPATIBILITY TO TRAILS
LOW COMPATIBILITY
MODERATE COMPATIBILITY
HIGH COMPATIBILITY
EXISTING TRAIL

Dimple Dell Regional Park

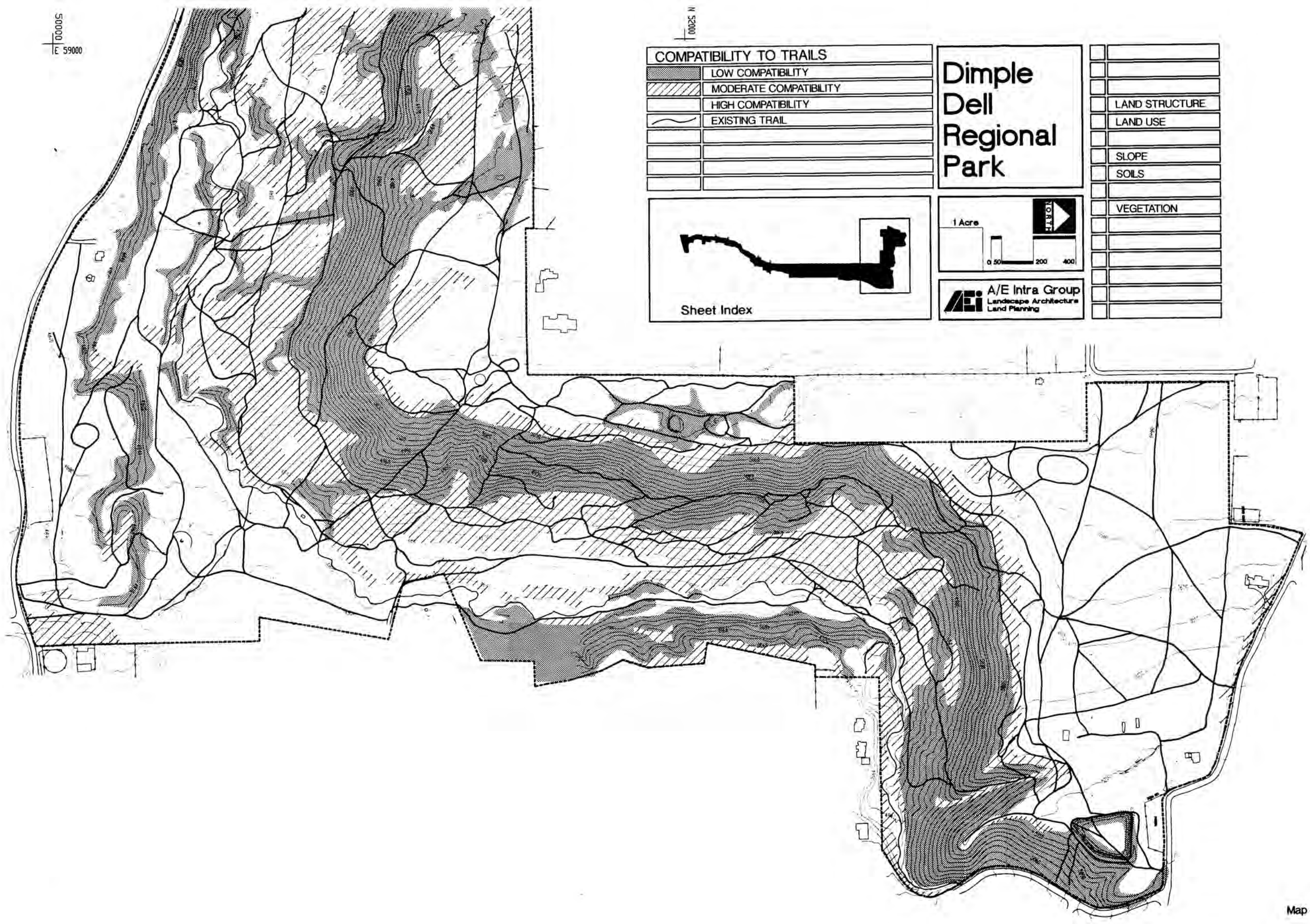
- LAND STRUCTURE
- LAND USE
- SLOPE
- SOILS
- VEGETATION





A/E Intra Group
Landscape Architecture
Land Planning

Map 4.03.3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COMPATIBILITY TO TRAILS
LOW COMPATIBILITY
MODERATE COMPATIBILITY
HIGH COMPATIBILITY
EXISTING TRAIL
Dimple Dell Regional Park
LAND STRUCTURE
LAND USE
SLOPE
SOILS
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Map 4.03.4

4.04 AREAS OF INTEREST

To identify more clearly the areas of the site that have a natural appeal to the park visitor an Areas of Interest map has been prepared. This map locates physical features in the park that have a value of interest for park visitors, such as cottonwood riparian zones, stream corridors, dense scrub oak cover, or view points.

The Dry Creek drainage offers park visitors a variety of environmental experiences; hot south facing slopes, stream corridor with cool shade and dense vegetation, wildlife habitat, open grasslands, and canopies of oak vegetation. Individually, park visitors will experience varying levels of interest in the different varieties of environmental conditions found in the park. To identify which environments would be more highly desirable to park visitors, the park has been rated into three categories: High Interest, Moderate Interest, and Low Interest. Using the inventory maps of Land Structures, Land Use, Vegetation, and Stream Corridor, the most highly desirable environmental aspects of each inventory map were used in delineating High Interest Areas. The less desirable environmental aspects of each inventory map, were used in defining both Moderate and Low Interest categories.

There are certain site features on the Land Use site inventory maps that have also been identified on the Areas of Interest map as an overlay to the entire park site. These site features are shown in order to identify areas that have additional potential interest in the park. These features are shown to identify their locations only, and have not been given rankings of high, moderate or low interest at this time. Their level of interest can be determined through further study to realize their potential for interpretive activities. These site features are specifically the historical buildings and structures, and archeological sites.

Observation point locations taken from the Aesthetics inventory map have also been identified on the Area of Interest map. No ranking of high, moderate or low interest have been given to these features, however, views within the park and views beyond the park add substantially to the interest of an area.

The following is an outline for the ranking of the level of interest assigned to each inventory map category:

HIGH INTEREST

3.04	Land Structure	Stream Bed / Promontory
3.05	Land Use	Viewing / Picnicking
3.10	Vegetation	Upper Story Deciduous Groves / Historic Agricultural Orchard

MODERATE INTEREST

3.04	Land Structure	Rim
3.10	Vegetation	Medium Story Tree Massing

LOW INTEREST

3.04	Land Structure	Steep Slope / Wash / Escarpment / Terrace
3.05	Land Use	Walking / Equestrian / Cycling / Maintenance Vehicle
3.10	Vegetation	Lower Story Trees and Shrubs, Scattered / Shrub and Grasses / Grasses / Barren Ground

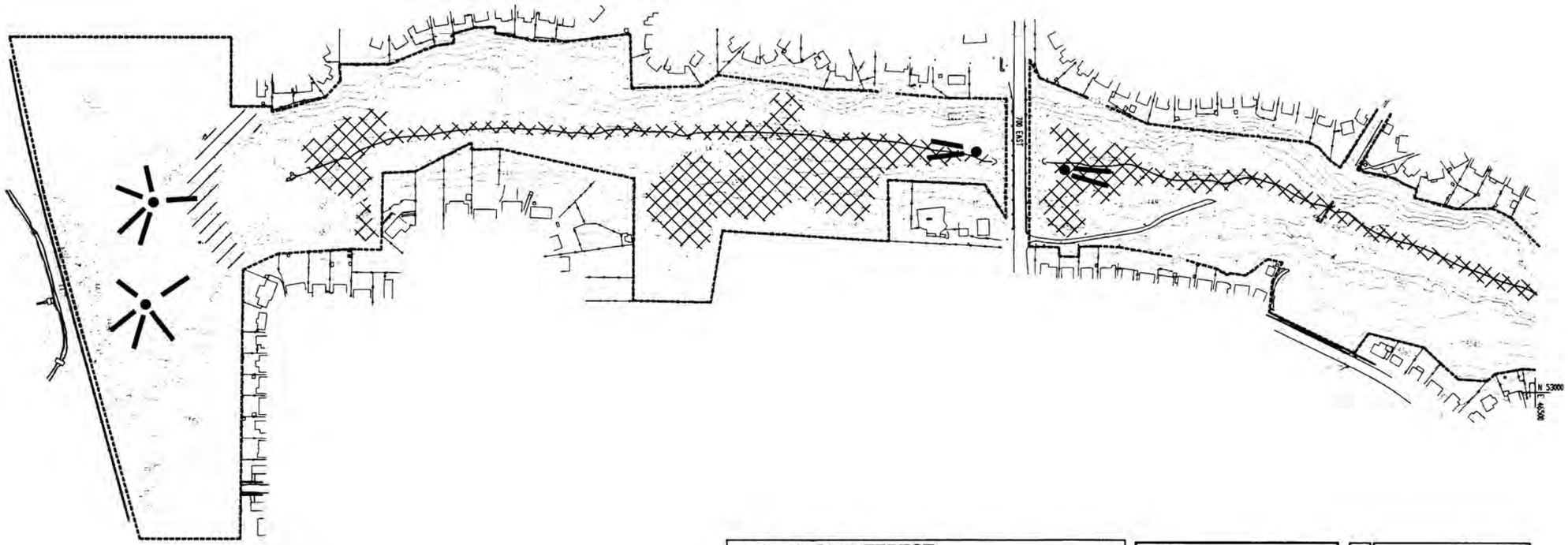
OVERLAY FEATURES

3.02	Aesthetics	Views Within Park / Views Beyond Park
3.05	Land Use	Historical Buildings or Structures / Sites of Archaeological Significance

AREAS OF INTEREST 4.04

MAP 4.04.1
MAP 4.04.2
MAP 4.04.3
MAP 4.04.4

RESOURCE SENSITIVITY



AREAS OF INTEREST
High Interest
Moderate Interest
Low Interest
View Point
Historic Site
Archaelogical Area

Dimple Dell Regional Park

- AESTHETICS
- LAND STRUCTURE
- LAND USE
- VEGETATION

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1 Acre

NORTH

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A/E Intra Group
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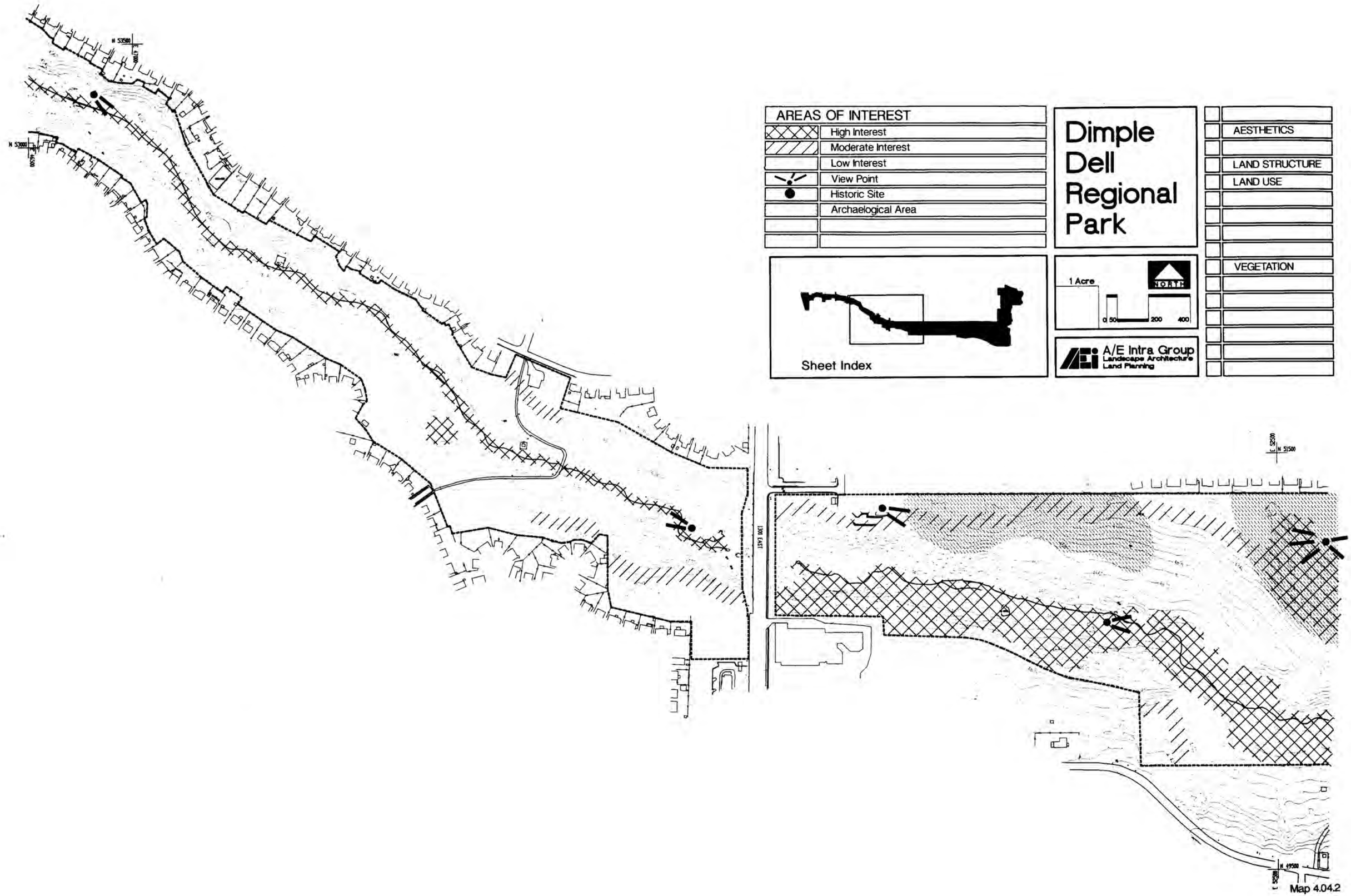
Map 4.04.1



AREAS OF INTEREST

- High Interest
- Moderate Interest
- Low Interest
- View Point
- Historic Site
- Archaeological Area

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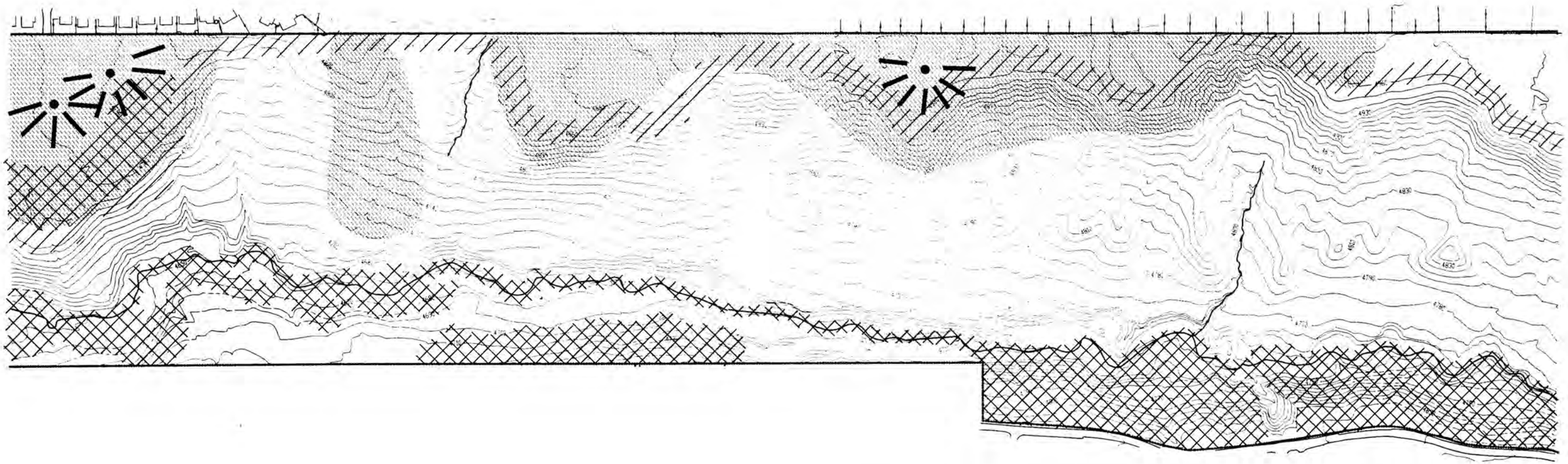
A/E Intra Group
Landscape Architecture
Land Planning

- AESTHETICS
- LAND STRUCTURE
- LAND USE
- VEGETATION

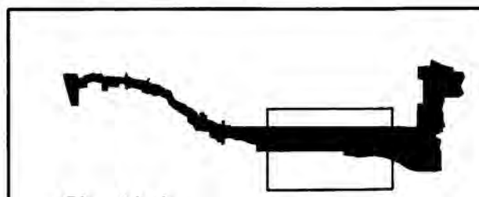
Map 4.04.2

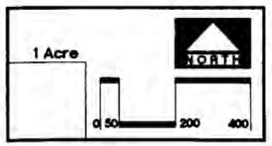


AREAS OF INTEREST
High Interest
Moderate Interest
Low Interest
View Point
Historic Site
Archaelogical Area

Dimple Dell Regional Park

AESTHETICS
LAND STRUCTURE
LAND USE
VEGETATION





A/E Intra Group
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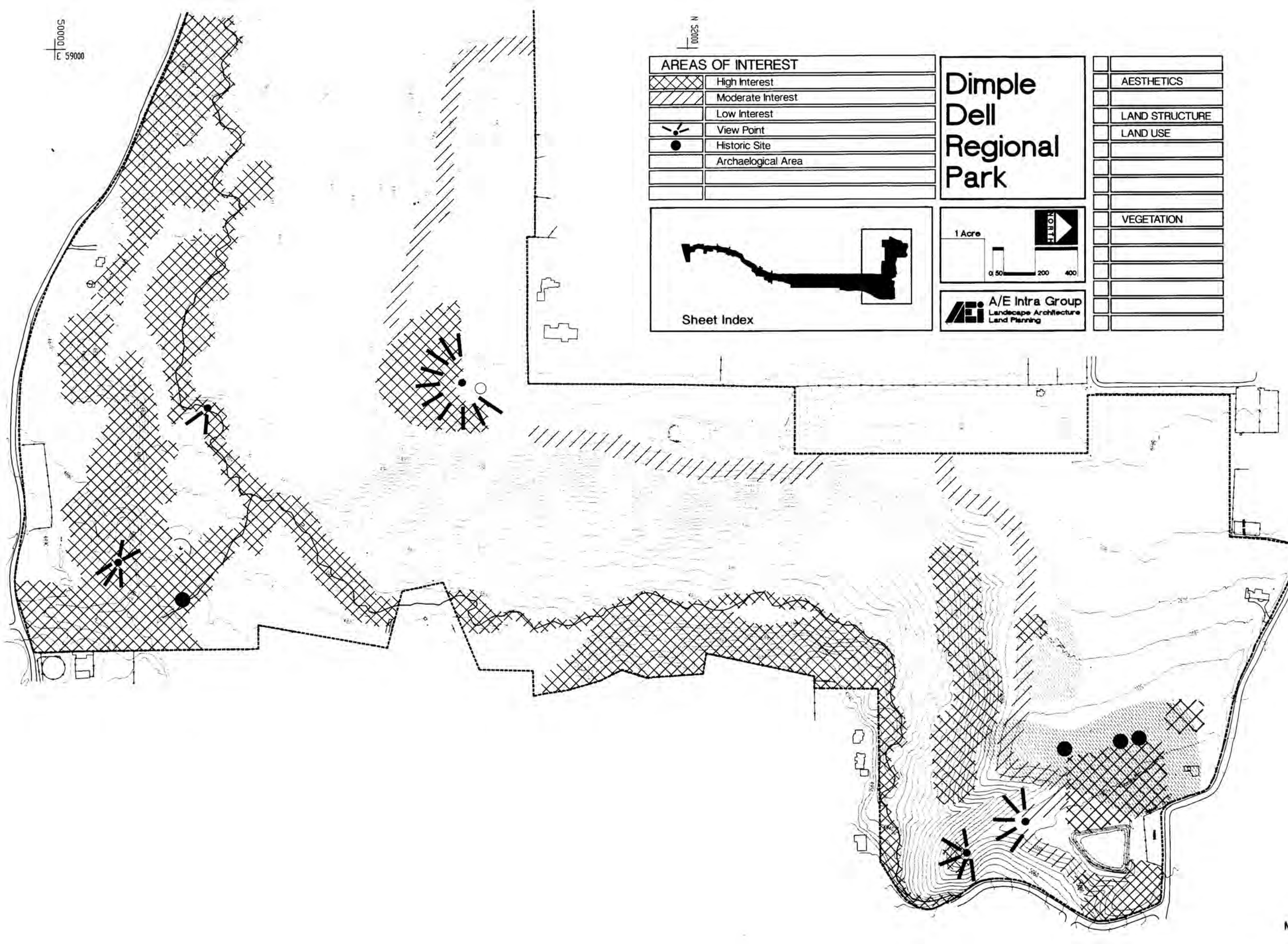
Land Planning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AREAS OF INTEREST
High Interest
Moderate Interest
Low Interest
View Point
Historic Site
Archaelogical Area
Dimple Dell Regional Park
AESTHETICS
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Map 4.04.4

4.05 EROSION POTENTIAL

Several elements have been considered in determining the severity of erosion in the Dry Creek Drainage. Each element, when looked at alone does not create potential deleterious conditions. However, when these conditions are combined with other elements, deleterious potentials are the result.

While not being specific in identifying critical problem areas, the sensitivity study for erosion does locate areas with either high, moderate or low potentials for erosion problems. The inventory maps of Slope, Soils, Utilities, Land Structure, Hydrology, Land Use and Vegetation were combined in an overlay to identify areas of erosion potential.

The Erosion Potential sensitivity map is to be used in rehabilitating the park site from current erosion conditions and to identify areas that will require action to eliminate future erosion.

The following is an outline for ranking the potential for erosion of each inventory map category:

HIGH POTENTIAL

3.03	Hydrology	Dry Creek Corridor / Secondary Drainage / Utility Drainage
3.04	Land Structure	Washes / Escarpments / Steep Slopes / Stream Bed
3.05	Land Use	Existing Trail (trails located on steep barren slopes)
3.07	Slope	30%+
3.08	Soils	Knutsen, eroded / Preston / Sandy
3.09	Utilities	Storm Sewer Outlet / Flood Control Devises*
3.10	Vegetation	Barren Ground

MODERATE POTENTIAL

3.04	Land Structure	Rim / Terrace
3.05	Land Use	Existing Trails (trails located on steep grass slopes)
3.07	Slope	15% to 30%
3.08	Soils	Loamy Borrow Pits / Knutsen / Sandy Alluvium / Wasatch (when disturbed)
3.10	Vegetation	Grasses

LOW POTENTIAL

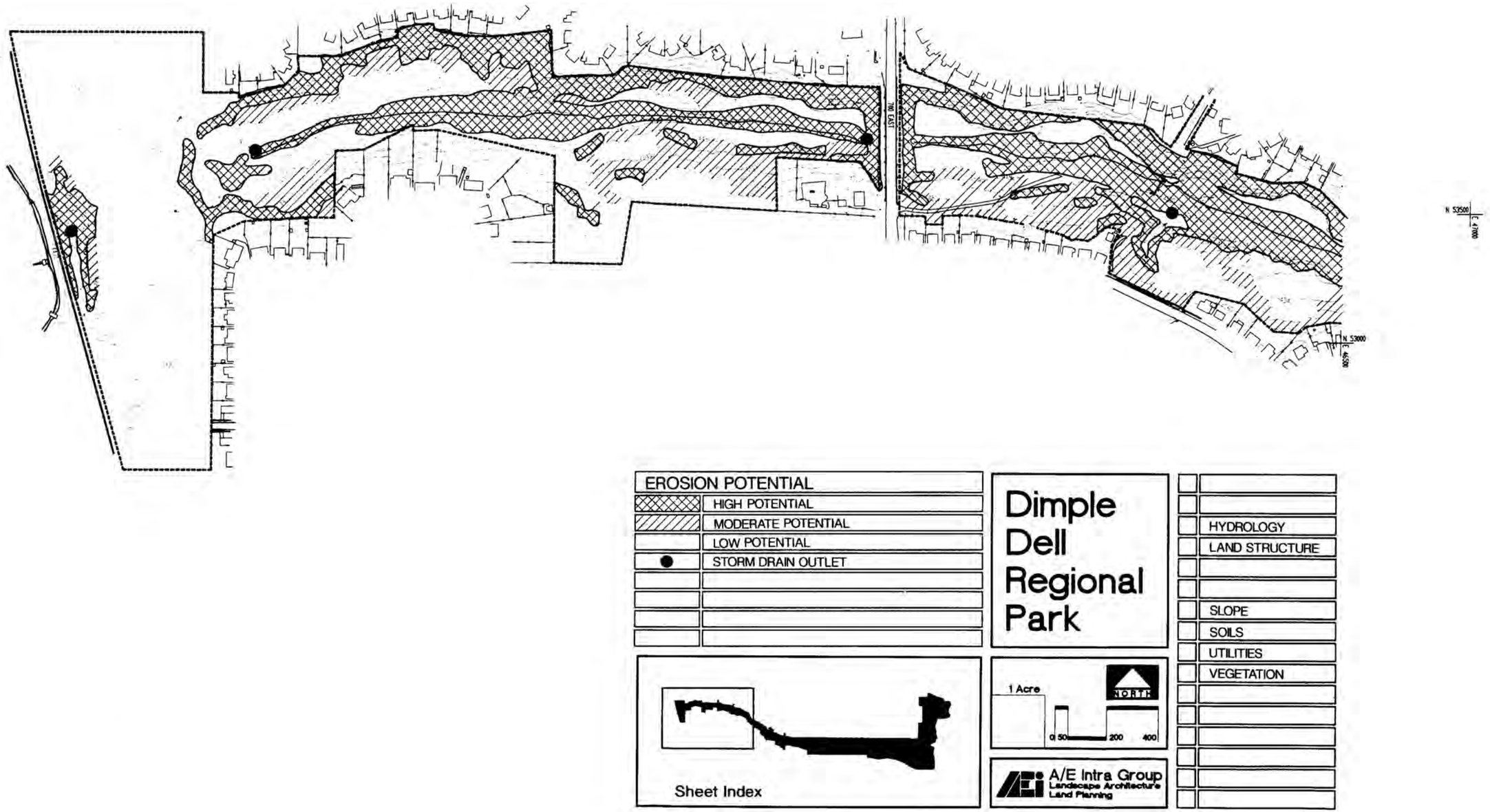
3.04	Land Structure	Terrace
3.05	Land Use	Existing Trails (trails located in Upper Story Deciduous Groves, Medium Story Tree Massings, Lower Story Tree and Shrub areas, and Shrub and Grass areas)
3.07	Slope	0% to 5% / 5% to 15%
3.08	Soils	Dumps / Wasatch (when undisturbed)
3.10	Vegetation	Upper Story Deciduous Groves, Medium Story Tree Massing, Lower Story Tree and Shrub, Shrub and Grasses

*Flood control devises were identified during on site investigation.

EROSION POTENTIAL 4.05

MAP 4.05.1
MAP 4.05.2
MAP 4.05.3
MAP 4.05.4

RESOURCE SENSITIVITY



EROSION POTENTIAL

- HIGH POTENTIAL
- MODERATE POTENTIAL
- LOW POTENTIAL
- STORM DRAIN OUTLET

Dimple Dell Regional Park

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A/E Intra Group
Landscape Architecture
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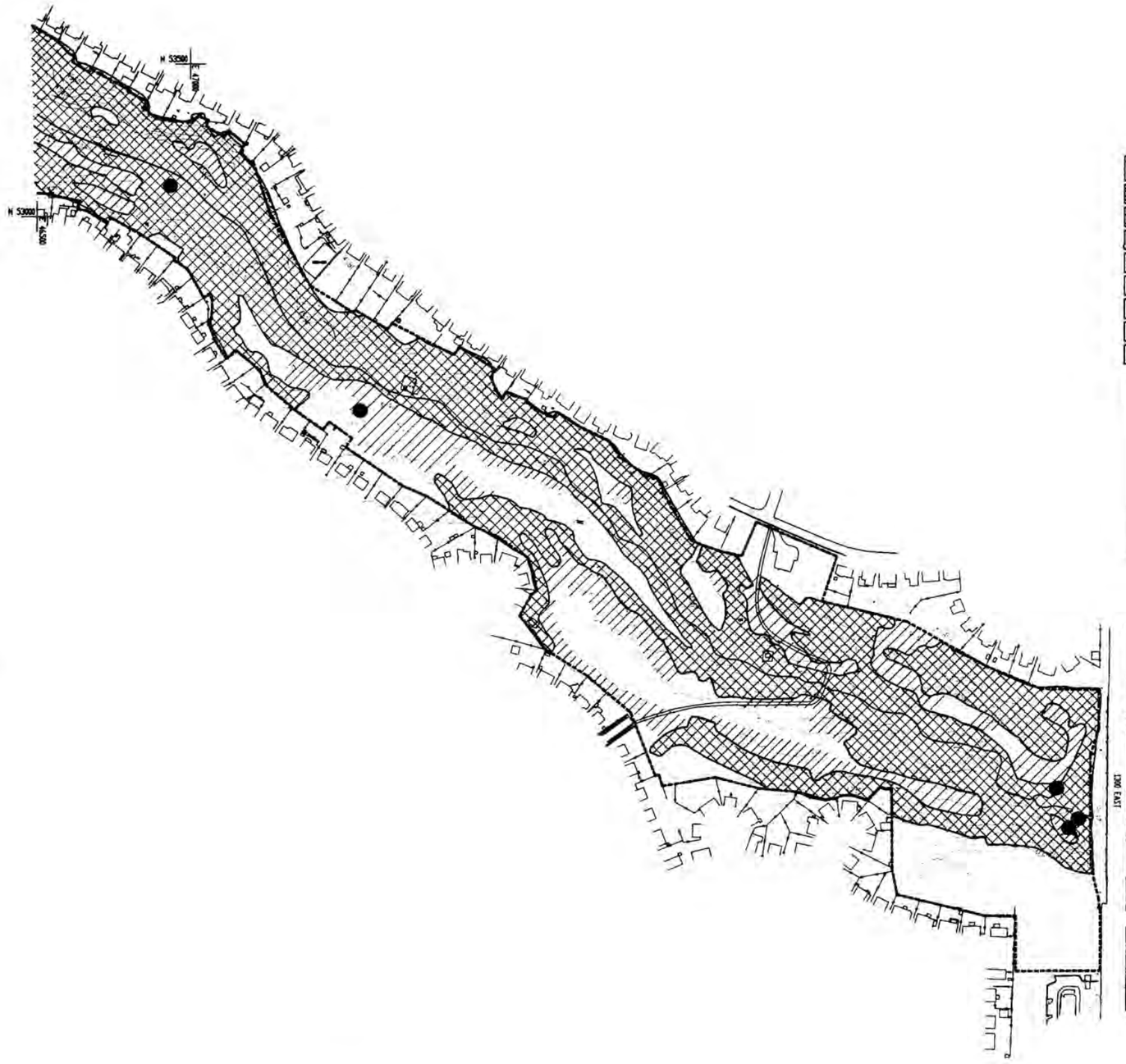
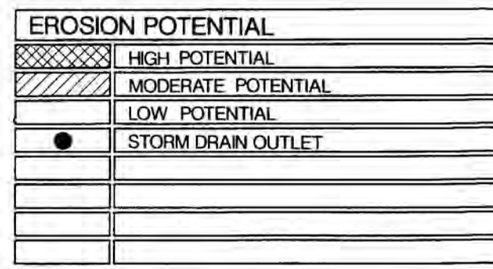
- HYDROLOGY
- LAND STRUCTURE
- SLOPE
- SOILS
- UTILITIES
- VEGETATION





EROSION POTENTIAL

- HIGH POTENTIAL
- MODERATE POTENTIAL
- LOW POTENTIAL
- STORM DRAIN OUTLET

Dimple Dell Regional Park

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A/E Intra Group
Landscape Architecture
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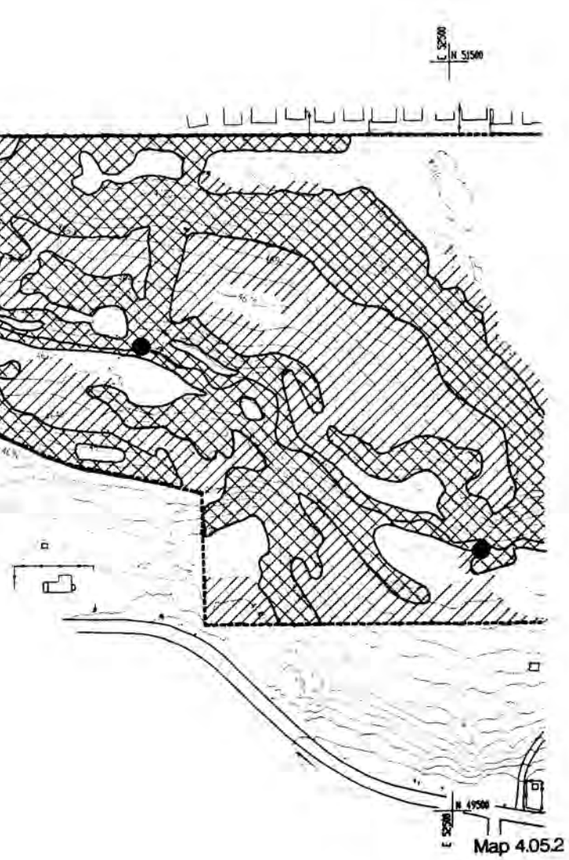
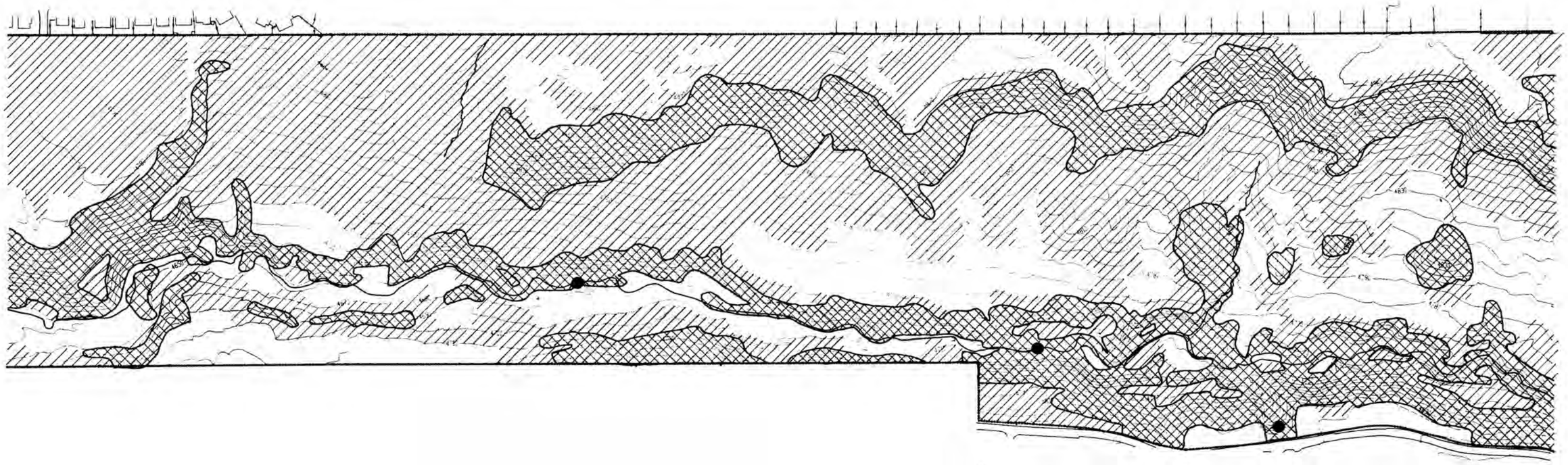
- HYDROLOGY
- LAND STRUCTURE
- SLOPE
- SOILS
- UTILITIES
- VEGETATION



Map 4.05.2



EROSION POTENTIAL
HIGH POTENTIAL
MODERATE POTENTIAL
LOW POTENTIAL
STORM DRAIN OUTLET

Dimple Dell Regional Park

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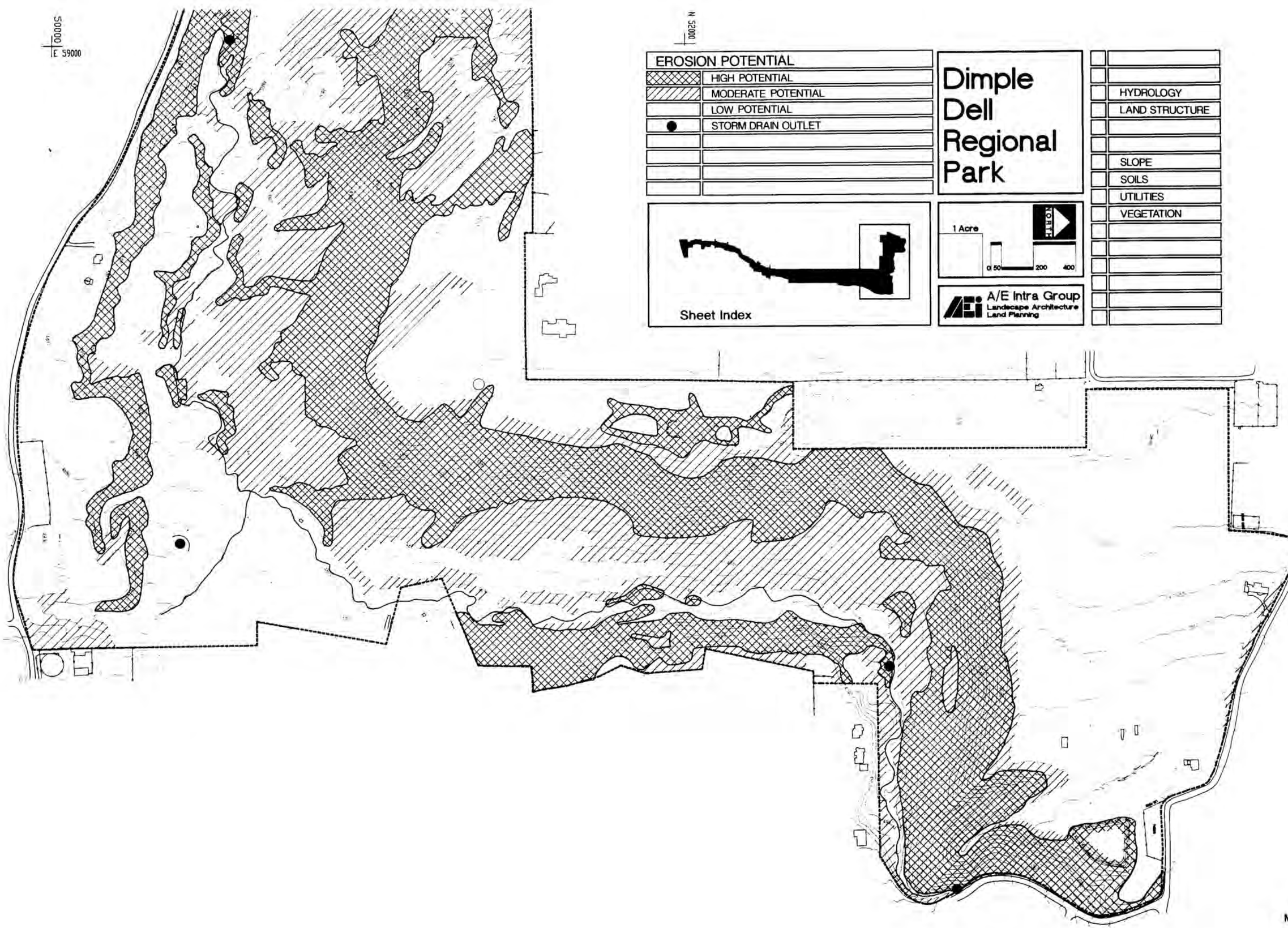
- HYDROLOGY
- LAND STRUCTURE
- SLOPE
- SOILS
- UTILITIES
- VEGETATION

Map 4.05.3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EROSION POTENTIAL
HIGH POTENTIAL
MODERATE POTENTIAL
LOW POTENTIAL
STORM DRAIN OUTLET
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Dimple Dell Regional Park
HYDROLOGY
LAND STRUCTURE
SLOPE
SOILS
UTILITIES
VEGETATION
1 Acre
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0 50 200 400
A/E Intra Group
Landscape Architecture
Land Planning

Map 4.05.4

4.06 IMPACTS TO WILDLIFE

The Impacts to Wildlife sensitivity map identifies the elements of the park that have a negative impact to the wildlife of the park and their habitat. Some of these impacts are from the natural dynamics of the park site. Other impacts have been caused by an increased presence of man. In some cases these impacts can be mitigated.

To identify what areas of the park have an impact to wildlife the Adjacent Land Use, Land Use and Vegetation inventory maps have been used.

Following is an outline of the level of impact assigned to each category of the inventory maps:

HIGH IMPACT

3.01	Adjacent Land Use	Commercial
3.05	Land Use	Defined Public Access / Defined Trail Head
3.10	Vegetation	Barren Ground

MODERATE IMPACT

3.01	Adjacent Land Use	Residential / Recreational
3.05	Land Use	Undefined Public Access / Picnicking / Equestrian

LOW IMPACT

3.01	Adjacent Land Use	Equestrian Residential / Abandoned Industrial / Utility / Undeveloped
3.05	Land Use	Viewing / Pedestrian, Cycling Trails / Vehicle*

*Vehicle is listed as low impact due to low frequency of vehicle traffic.

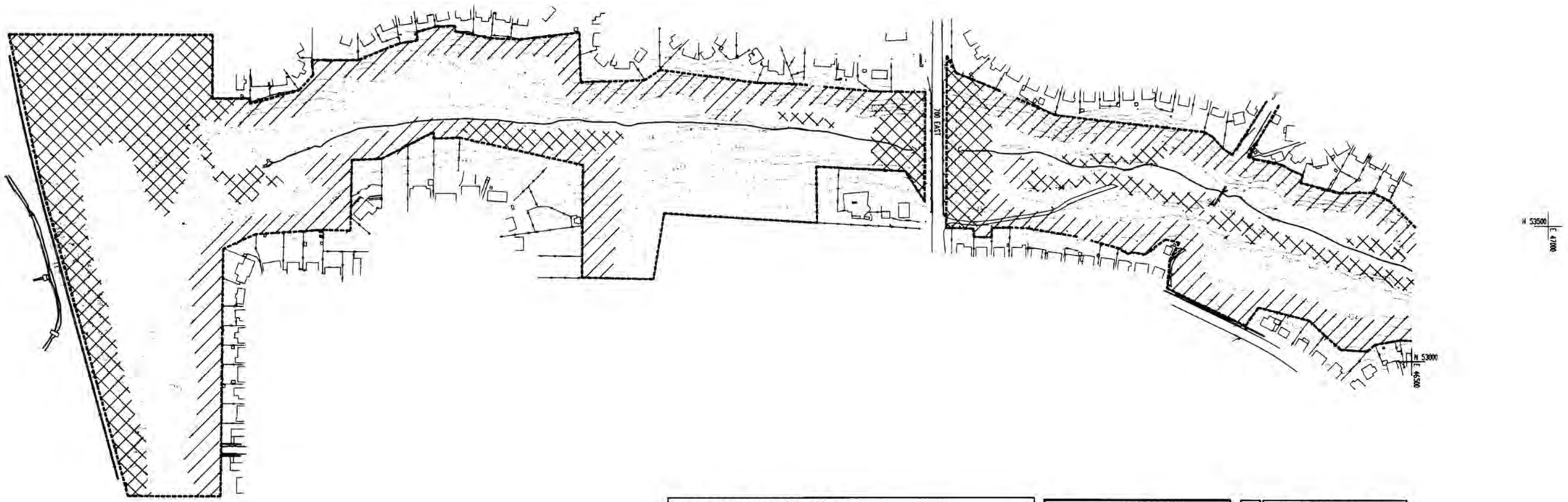
Trails on the park have some impact on the wildlife. The degree that a trail impacts the wildlife is dependant on the use of the trail and the construction of the trail. Exact trail use frequency had not been determined nor has designated trail locations. Therefore, trail impacts have not been considered.

An additional element that impacts the wildlife of the park are domestic animals roaming loose in the park. There is substantial evidence that neighborhood dogs, cats, etc. have an impact on the park's wildlife. Currently, the magnitude of the impact is not known.

IMPACT TO WILDLIFE 4.06

MAP 4.06.1
MAP 4.06.2
MAP 4.06.3
MAP 4.06.4

R E S O U R C E S E N S I T I V I T Y



IMPACT TO WILDLIFE
High Impact
Moderate Impact
Low Impact

Dimple Dell Regional Park

ADJ. LAND USE
LAND USE
VEGETATION

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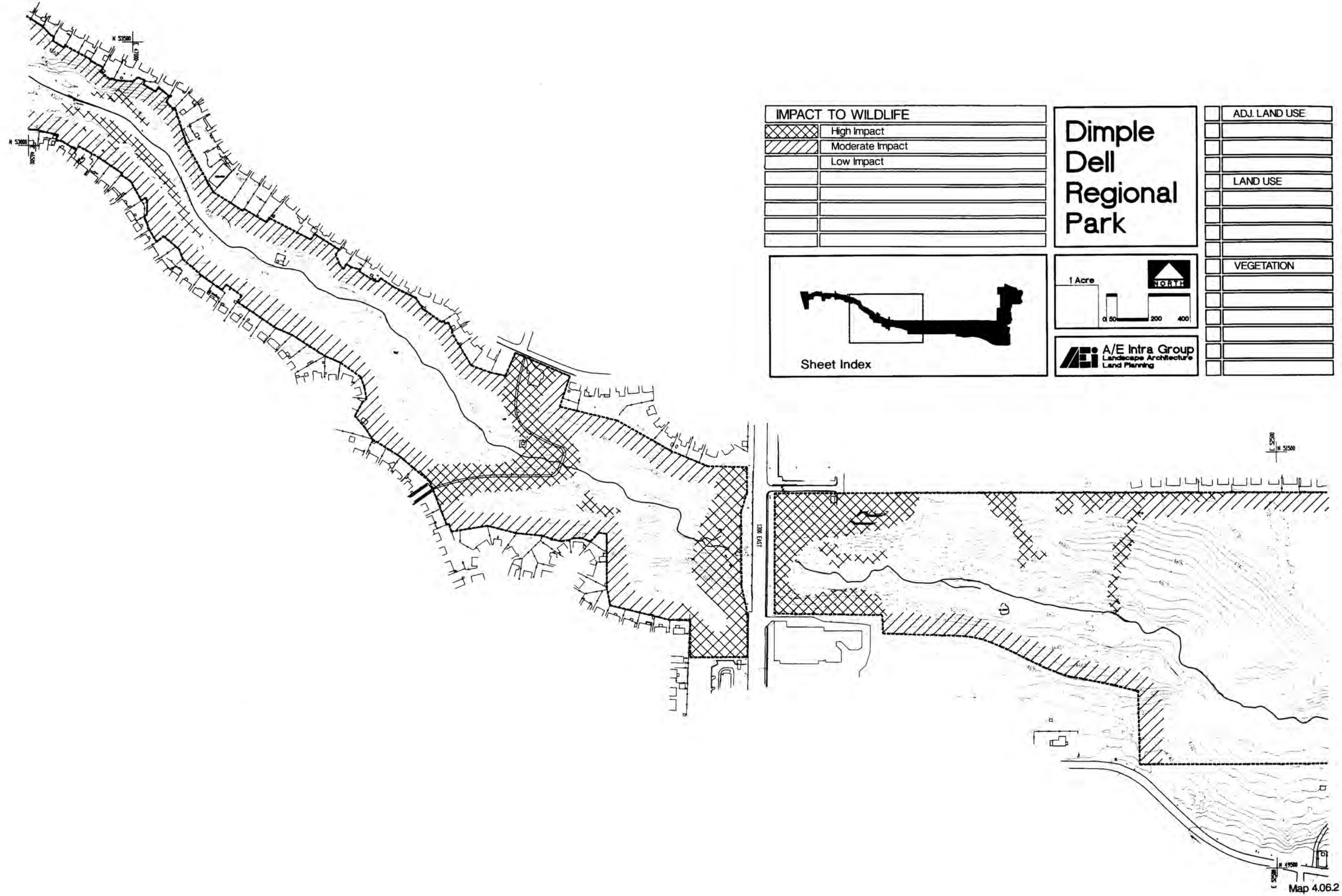
Map 4.06.1



IMPACT TO WILDLIFE
High Impact
Moderate Impact
Low Impact
Dimple Dell Regional Park
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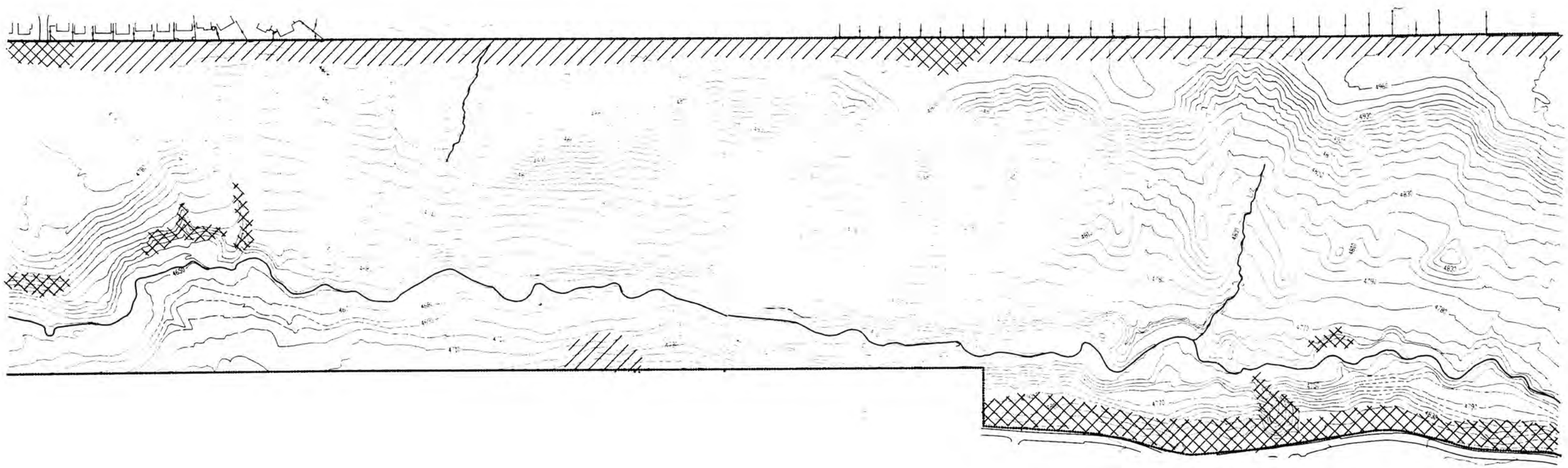
A/E Intra Group
Landscape Architecture
Land Planning
ADJ. LAND USE
LAND USE
VEGETATION
1300 EAST

Map 4.06.2



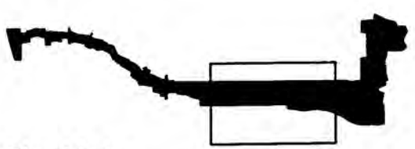
IMPACT TO WILDLIFE
High Impact
Moderate Impact
Low Impact

Dimple Dell Regional Park

ADJ. LAND USE

LAND USE

VEGETATION



1 Acre

NORTH

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A/E Intra Group
Landscape Architecture
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Map 4.06.3

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IMPACT TO WILDLIFE
High Impact
Moderate Impact
Low Impact

Dimple Dell Regional Park

ADJ. LAND USE
LAND USE
VEGETATION

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A/E Intra Group
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Map 4.06.4

4.07 OFF SITE IMPACTS

Off Site Impacts sensitivity map identifies elements that are not within the park boundaries but have an impact on the park. These elements are determined to be negative elements to the park by distracting from the park experience or disturbing the park site. Some of these impacts are, for example, undesirable views, traffic noise, or roads or railroads that threaten park visitor safety.

The inventory maps used to create the Off Site Impacts sensitivity map are, Adjacent Land Uses, Land Use, Off Site Circulation, and Utilities. The information used from these maps was outside the park boundary. A special consideration needs to be given to the storm drainage category of the Utilities inventory. The outlet of many storm drainage systems is located in the park but the cause of the impact is outside the park. Whatever occurs to the storm drainage systems outside the park has a significant impact to the Dry Creek drainage and the park.

Identifying off site impacts will allow for appropriate mitigation and rehabilitation when considering park rehabilitation or development.

The following is an outline for the level of impact assigned to each inventory map category:

HIGH IMPACT

3.05	Land Use	Defined Public Access / Undefined Public Access / Defined Trail Head
3.06	Off Site Circulation	Primary Streets / Proposed Primary Streets / Secondary Streets / Tertiary Streets / Railroad ROW
3.09	Utilities	Storm Sewer

MODERATE IMPACT

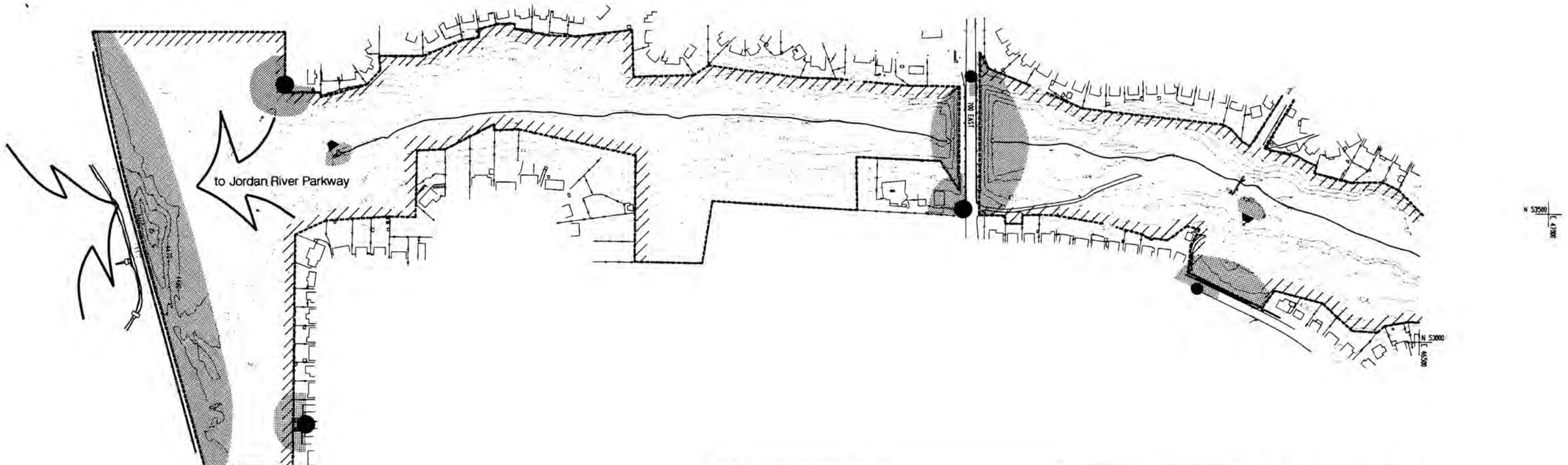
3.01	Adjacent Land Use	Residential / Commercial
3.06	Off Site Circulation	Trail Connection

No Low Impact classification is given. The mission statement of the park identifies the use of the park to be a nature park. Because Dimple Dell Park is surrounded by development and unnatural intrusions of man each activity adjacent to the park has an impact of at least a moderate degree.

OFF-SITE IMPACTS 4.07

MAP 4.07.1
MAP 4.07.2
MAP 4.07.3
MAP 4.07.4

R E S O U R C E S E N S I T I V I T Y



OFF SITE IMPACTS	
	High Impact
	Moderate Impact
	Access Point
	Storm Drainage Point of Outlet
	Trail Connection
	Proposed Road

Dimple Dell Regional Park

	ADJ. LAND USE
	LAND USE
	OFF SITE CIRCUL
	UTILITIES

Sheet Index

1 Acre

NORTH

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A/E Intra Group
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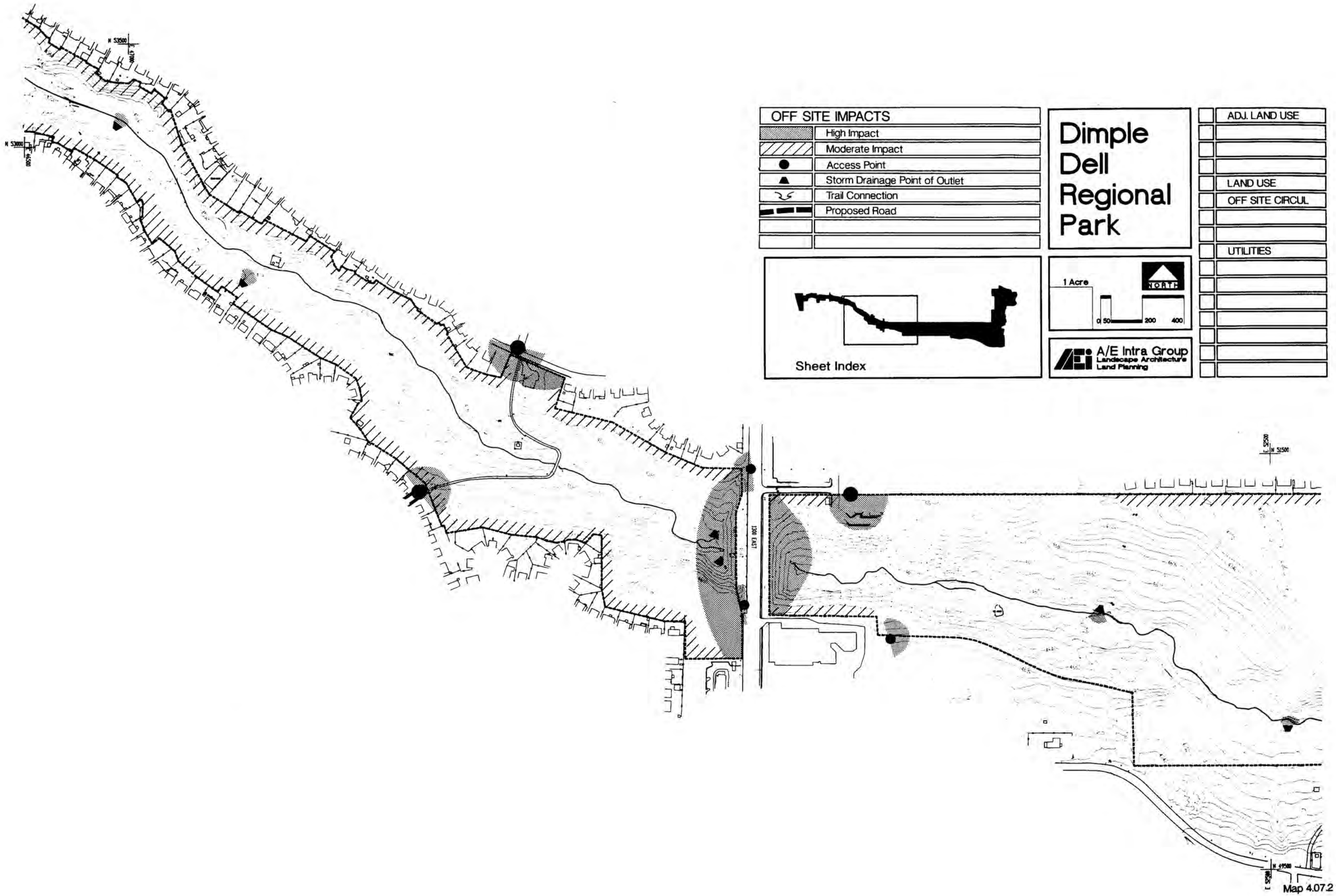
Map 4.07.1



OFF SITE IMPACTS

- High Impact
- Moderate Impact
- Access Point
- Storm Drainage Point of Outlet
- Trail Connection
- Proposed Road

Dimple Dell Regional Park

ADJ. LAND USE

LAND USE

OFF SITE CIRCUL

UTILITIES

Sheet Index

1 Acre

NORTH

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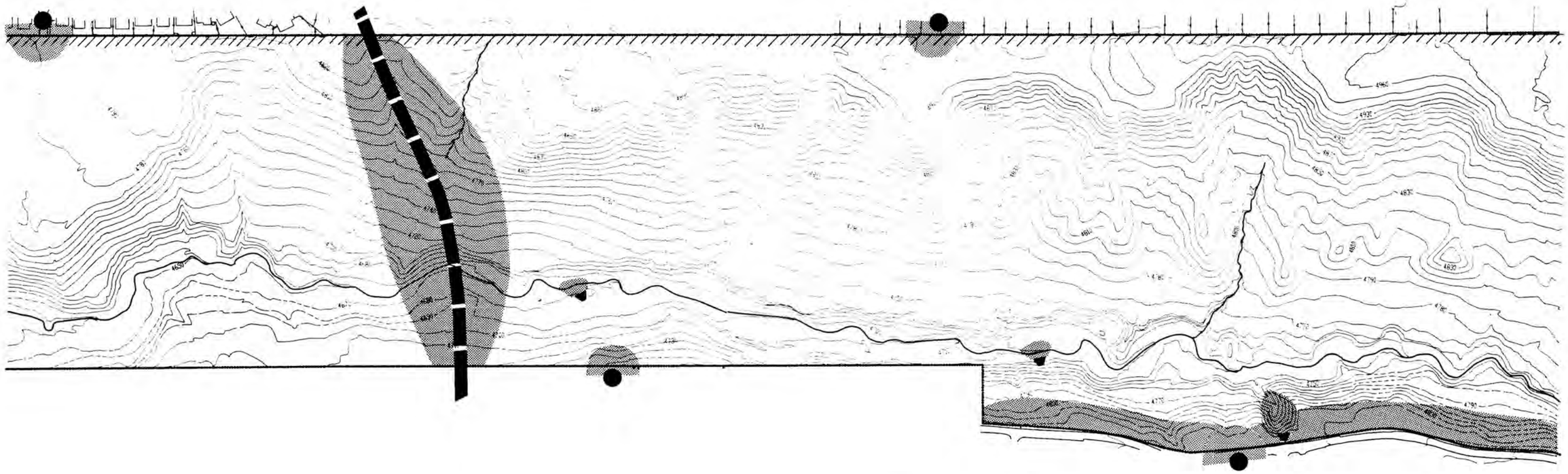
A/E Intra Group
Landscape Architecture
Land Planning

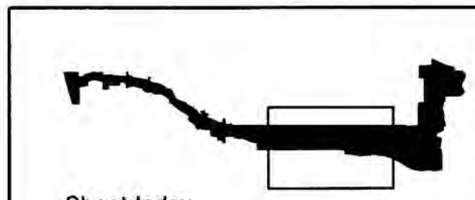
Map 4.07.2

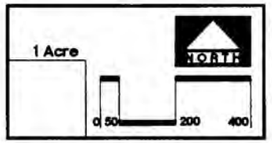


OFF SITE IMPACTS
High Impact
Moderate Impact
Access Point
Storm Drainage Point of Outlet
Trail Connection
Proposed Road

Dimple Dell Regional Park

ADJ. LAND USE
LAND USE
OFF SITE CIRCUL
UTILITIES





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Landscape Architecture
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OFF SITE IMPACTS
High Impact
Moderate Impact
Access Point
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Trail Connection
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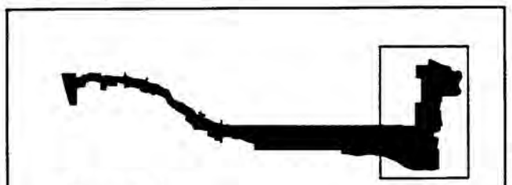
Dimple Dell Regional Park

ADJ. LAND USE
LAND USE
OFF SITE CIRCUL
UTILITIES



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A/E Intra Group
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Land Planning

to Wasatch Range

Map 4.07.4

4.08 STREAM ALIGNMENT STABILITY

Creating a stable alignment for the Dry Creek drainage and confining peak load runoff will need to be a high priority in the rehabilitation efforts in the park. Characteristics of an unstable corridor are apparent throughout much of the park. In a comparison of aerial photography taken in 1968, 1980, and 1990, the Dry Creek stream bed lost most of its stability during the period between 1968 to 1980. From 1980 to the present time only minor widening and meandering of the stream channel has occurred.

When efforts are made to create a stable stream alignment, additional consideration needs to be given to secondary drainages and storm drainage systems entering the Dry Creek corridor.

Three categories of alignment have been identified on this sensitivity map, Severely Unstable, Moderately Unstable, and Stable. The inventory maps used to create this sensitivity map were, Hydrology/Drainage, Land Structures, Utilities, Vegetation.

Following is an outline of the inventory map category rankings used to establish the Stream Alignment Stability Map:

SEVERELY UNSTABLE

3.03	Hydrology*	Primary Drainage / Secondary Drainage
3.04	Land Structures	Escarpments / Stream Bed* / Wash
3.09	Utilities	Storm Drainage Outlets
3.10	Vegetation	Barren Ground

MODERATELY STABLE

3.03	Hydrology*	Primary Drainage / Secondary Drainage
3.04	Land Structures	Steep Slope / Stream Bed*
3.09	Utilities	Storm Drainages Outlets
3.10	Vegetation	Grasses

STABLE

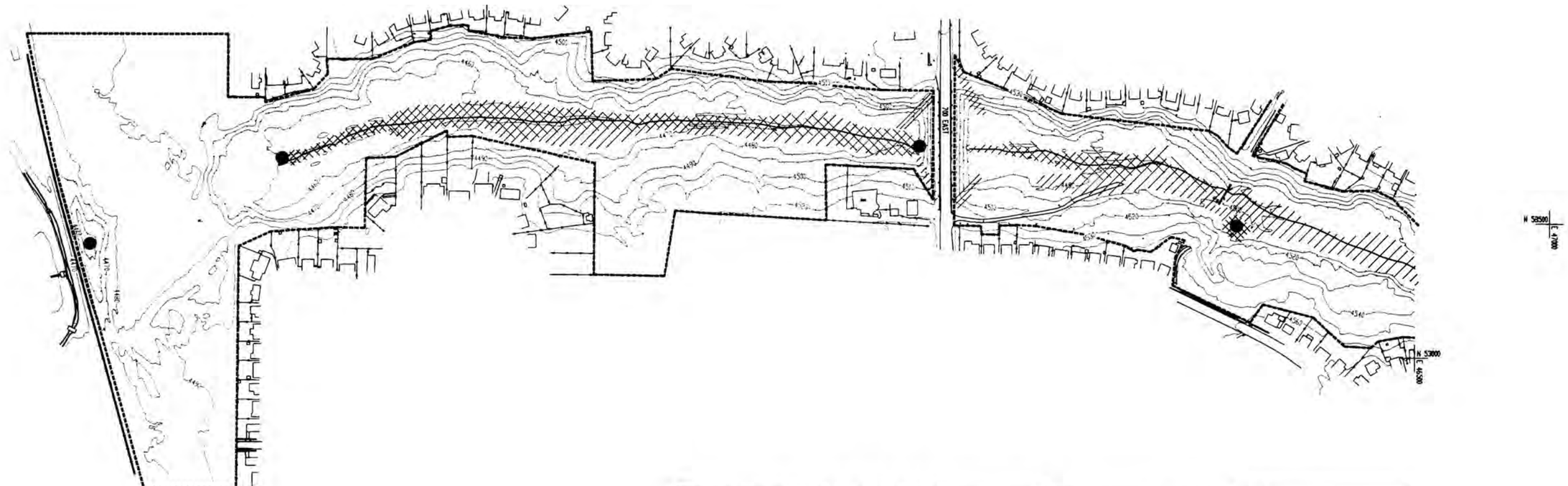
3.03	Hydrology	Primary Drainage / Secondary Drainage
3.04	Land Structures	Stream Bed*
3.10	Vegetation	On site investigation was conducted to determine areas of established riparian growth which were identified as contributing to stable stream alignment.

*An on site investigation of the primary and secondary steam beds gave more detail to what was occurring in the stream bed. Meanders, wash-outs, and areas of siltation build up were identified and mapped as were areas where the stream channels is stable.

STREAM ALIGNMENT STABILITY 4.08

MAP 4.08.1
MAP 4.08.2
MAP 4.08.3
MAP 4.08.4

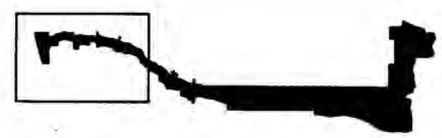
RESOURCE SENSITIVITY



STREAM ALIGNMENT STABILITY
SEVERLY UNSTABLE
MODERATELY UNSTABLE
STABLE
STORM DRAIN OUTLET

Dimple Dell Regional Park

- HYDROLOGY
- LAND STRUCTURE
- UTILITIES
- VEGETATION



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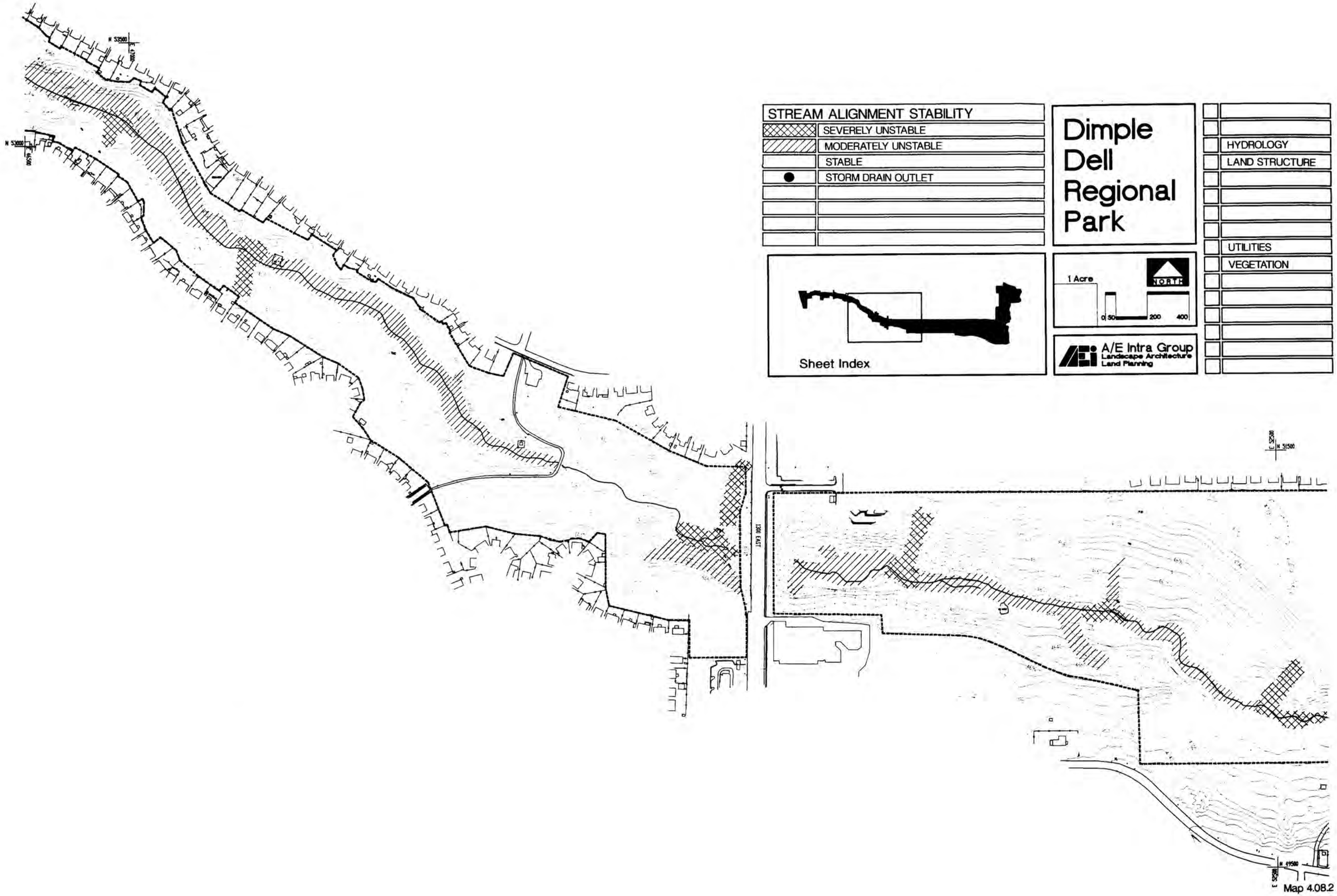

STREAM ALIGNMENT STABILITY	
	SEVERELY UNSTABLE
	MODERATELY UNSTABLE
	STABLE
●	STORM DRAIN OUTLET

Dimple Dell Regional Park

- HYDROLOGY
- LAND STRUCTURE
- UTILITIES
- VEGETATION

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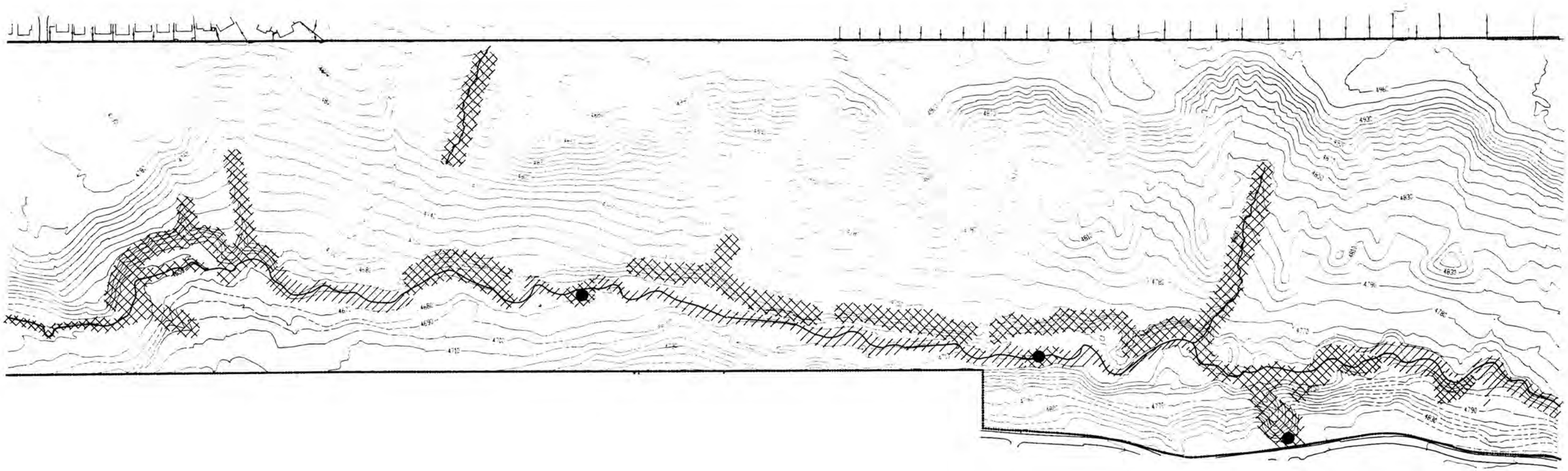
Map 4.08.2



STREAM ALIGNMENT STABILITY
SEVERELY UNSTABLE
MODERATELY UNSTABLE
STABLE
STORM DRAIN OUTLET

Sheet Index

Dimple Dell Regional Park

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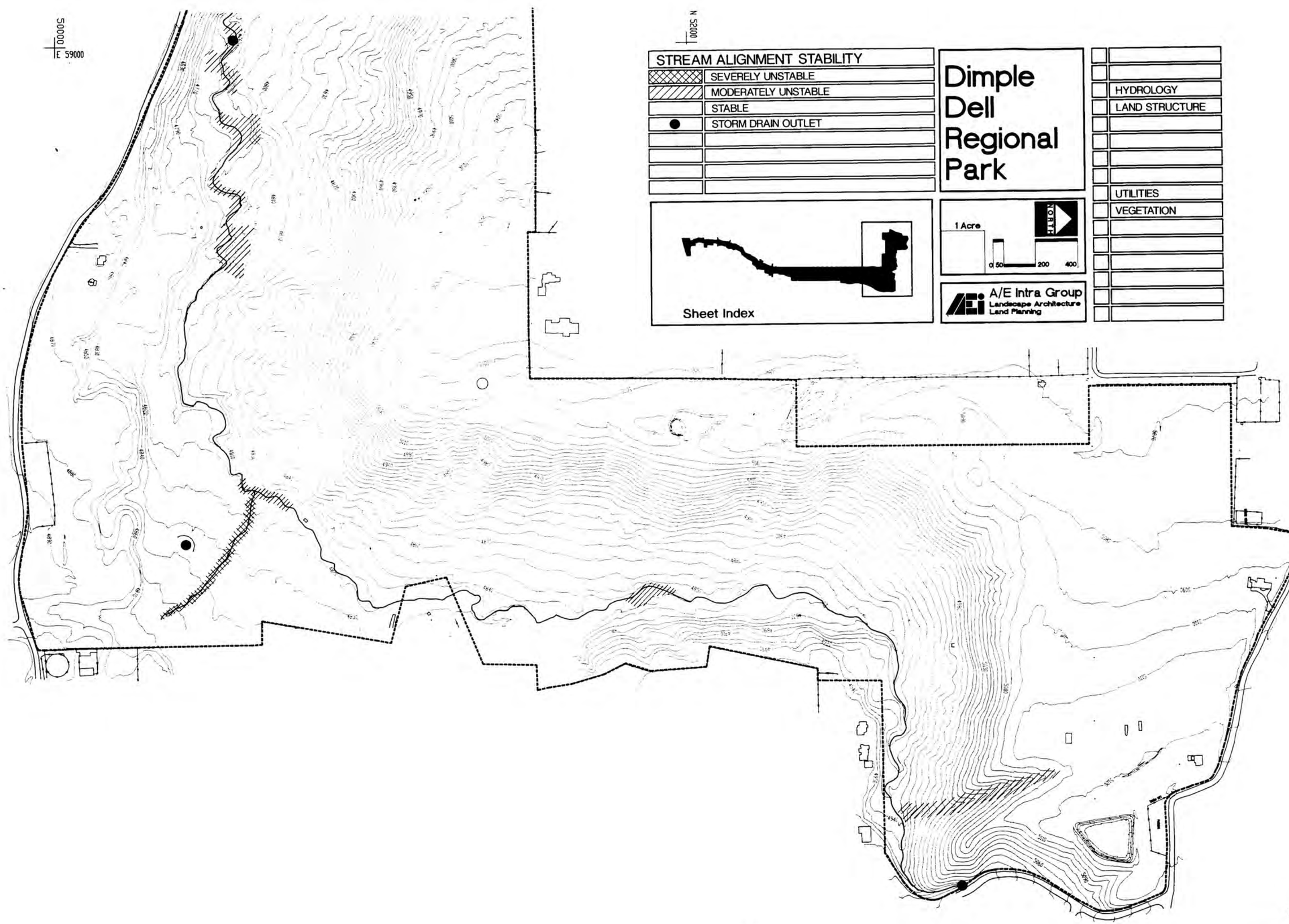
- HYDROLOGY
- LAND STRUCTURE
- UTILITIES
- VEGETATION

Map 4.08.3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STREAM ALIGNMENT STABILITY
SEVERELY UNSTABLE
MODERATELY UNSTABLE
STABLE
STORM DRAIN OUTLET
Dimple Dell Regional Park
HYDROLOGY
LAND STRUCTURE
UTILITIES
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Map 4.08.4

In the process of identifying critical conditions (disturbed sites in the park), we have not attempted to point out each specific site disturbance.

The critical conditions that this section identifies, represent comparable critical conditions found throughout the park.

5.01. Overview of Erosion Conditions

1. Erosion Problems and Related Causes

Land disturbance in Dimple Dell Regional Park can be attributed to a number of factors. Disturbances, both past and present, have been specifically caused by drainage runoff from adjacent residential and commercial developments, recreational use by four-wheel drive vehicles, horses, hikers, fires, overgrazing of the land by domestic animals, indiscriminate dumping of garbage, and flood drainage.

Following any land disturbance caused by man, the forces of wind and water accelerate soil erosion, sedimentation, and the loss of vegetation. Long-term environmental and economic impacts are the result of years of land disturbances and the lack of land use regulations. Environmental problems evolve silently and slowly, and do not produce dramatic results for a period of time, at which point it may be too late for a complete restoration of the natural environment.

2. Environmental and Economic Impacts

The erosion of stream banks, combined with the diversion of irrigation water in Bells Canyon, have led to the decline of riparian vegetation which provides stream bank stabilization and wildlife habitat.

The build up of sedimentation in the stream bed has modified flow gradients in Dry Creek. Excessive soil deposition has also forced flow patterns of the stream to create wide floodplains and destructive stream meanders. The damaging effects of sedimentation build-up in riparian zones, cause vegetation to suffocate from the lack of oxygen to root zones. During the 1985-86' channelization of Dry Creek, the water table lowered, which also caused vegetation to die.

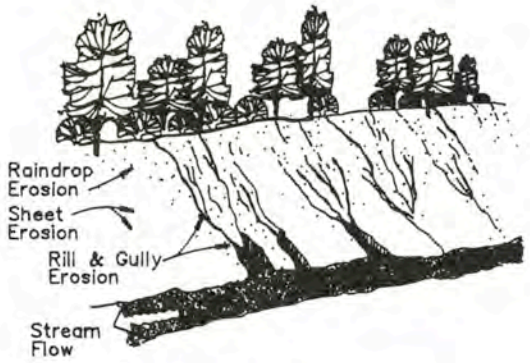
Wind and water erosion remove the smaller and less dense constituents of topsoil. These constituents, clay and fine silt particles and organic material, hold nutrients that plants require. The remaining subsoil is often infertile and droughty. In disturbed areas, erosion of fertile topsoil has severely diminished the ability of the land to support plant communities. To restore this ability, it will cost both money and time.

Economic impacts to the park's environment are hard to quantify, especially for a site such as this, where the decline of the environmental health and the erosion of soils, have taken place over several decades. Examples of environmental abuses in the park which have contributed to increased erosion problems are extensive. Aerial photography reveals that the majority of land disturbances in the park have occurred within the last twenty years. Erosion of valuable soils is a constant process, but because of the increased demands for park activities, man has sped up the erosion process and worsened the results. Costs to mitigate existing erosion problems, will be an indication of the value lost because of erosion.

3. Types of Erosion

When vegetation is disturbed, the soil surface becomes susceptible to wind and water erosion. Wind erosion is especially damaging to areas on the north rim of the park, east of 1300 east. In places, drifts of sand have accumulated to depths of 4 to 6 feet against residential fences.

In the following diagram, the various types of soil erosion are depicted. Evidence of each of these types of soil erosion can be found in Dimple Dell Park.



4. Erosion Factors

Four interacting elements that effect soil erosion are: climate, soil, topography, and ground cover.

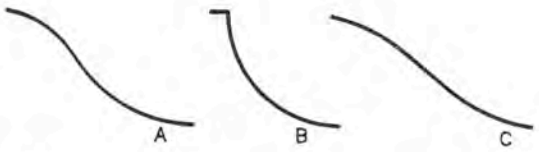
Climate, more specifically rainfall, is the driving force of soil erosion. Raindrops dislodge soil particles, and the runoff carries soil particles away. The erosive power of rain is determined by rainfall intensity (inches of rain per hour) and droplet size.

Climate data gathered at the Cottonwood Weir, located at the mouth of Big Cottonwood Canyon (five miles northeast of Dimple Dell Park), serves as the best representative source of precipitation rates to be expected in the Dry Creek drainage. An annual precipitation of approximately 23 inches per year, substantially effects the erosion of soil within the park.

COTTONWOOD WEIR											CLIMATE DATA SUMMARY		
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
MONTHLY NORMAL	1.72	1.79	2.65	3.52	2.14	1.30	.72	1.19	1.76	2.21	2.05	2.05	23.07
STD DEVIATION	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
MONTHLY AVERAGE	1.94	1.94	2.67	3.03	2.22	1.21	.71	1.19	1.33	1.79	1.92	2.15	22.09
STD DEVIATION	1.15	.81	1.19	1.47	1.73	.98	.65	.99	1.34	1.21	1.06	1.29	
HIGHEST MONTHLY	5.65	4.14	5.30	6.13	6.77	3.93	2.81	3.89	4.42	4.44	4.14	5.77	6.77
YEAR OF OCCUR	1953	1958	1952	1963	1977	1964	1973	1965	1973	1971	1970	1964	
LOWEST MONTHLY	.00	.67	.45	.82	.07	.02	.00	.00	.00	.00	.00	.02	.00
YEAR OF OCCUR	1961	1972	1956	1949	1963	1961	1978	1974	1979	1978	1976	1976	
GREATEST DAILY	3.20	1.55	1.57	1.86	2.61	1.51	1.13	1.66	2.45	2.00	1.77	1.90	3.20
DAY OF OCCUR	14	18	11	23	22	17	14	26	18	13	16	5	
YEAR OF OCCUR	1953	1954	1952	1957	1968	1964	1973	1965	1978	1966	1958	1956	
DAYS W/PCP ≥ .01	9	8	9	9	7	5	3	4	6	7	8	7	79
DAYS W/PCP ≥ .10	5	5	6	6	4	2	1	2	2	4	6	5	46
DAYS W/PCP ≥ .50	0	1	2	2	1	0	0	0	0	1	1	1	9

Soils in the Dry Creek drainage are primarily sands and gravelly sands. Lacking clay particles and other organic materials which naturally absorb precipitation, the sandy soils are droughty and very loose. When moisture does occur, infiltration rates are very rapid. An indication of how precipitation effects steep sandy slopes, can be achieved by counting the number of rill and gully erosion sites in different areas of the park. In sandy locations near the north rim, even the smallest disturbance will initiate rill and gully type erosion. As the volume and momentum of precipitation runoff increases on the lower slopes, massive gully and channel erosion develops. As a result, massive amounts of sandy soils are deposited into the Dry Creek stream corridor. The loss of fertile topsoil from the hillsides, reduces the ability of native vegetation to germination successfully.

The dramatic topography of Dimple Dell Regional Park, emphasizes the "nature aspect" of the environment.. However, when topography is figured into the formula of erosion, slope length and slope steepness greatly increase the potential for erosion. The shape of a slope also plays a major role in determining erosion potential. The base of a slope is more susceptible to erosion than the top. As runoff moves faster and becomes more concentrated toward the bottom of the slope, greater amounts of erosion occur. Convex slopes magnify erosion problems; whereas concave slope reduces it. Creating a relatively flat area at the base of a slope, not only reduces erosion but also allows sediment from the upper portions of the slope to settle out. If there is an abrupt change from flat upland to concave downslope, as the escarpments are within the stream corridor, water flowing over the top of the slope may undercut and steepen the slope. (see the figure below.)



A) Convex Slope
B) Concave Slope
C) Stable Slope

Ground cover usually means vegetation, but it can also include surface treatments such as mulches, wood chips and crushed rock. Vegetation is the most effective form of erosion control. No man-made products can compete with it for long-term durability and environmental enhancement. Vegetation shields the soil surface from the impact of falling rain, slows the velocity of runoff, holds soil particles in place, and helps soil maintain its capacity to absorb water.

5. Examples of soil erosion in the park.

Photo #1 - This photograph shows a highly used trail, north of the abandon sand pit. Most likely, horsemen and hikers traveling through the area were the initial disturbances which started this trail. In the beginning, the width of the trail was probably no more than 2 feet. Over time, as wind erosion has occurred in this area, a swale was created and the trail widened to 15 feet. As native grasses strive to reestablished themselves in the swale, winds continue to erode topsoil and expose the roots of the seedling grasses. Recent attempts to start tublings of Bitter Brush in this area have been fairly successful.

(Photo 1)

Photo #2 - This photograph of an actively eroding stream embankment, shows the eventual outcome of what happens when the base of a steep slope is left unprotected. As the alignment of Dry Creek makes sharp turns, stream flows cut away at the base of steep slopes. As the base is washed away, the upper portions of the embankment have no support. Day by day, valuable topsoil, trees, shrubs and grasses slough off the top edge and are lost.

(Photo 2)

Photo #3 - South facing slopes have environments that are naturally hotter and drier than north facing slopes. Steep escarpments facing south will continue to erode until environmental conditions become more favorable for vegetative growth.

(Photo 3)

Photo #4 - Attempts to control slope erosion by anchoring bales of straw into the hillside, work effectively in most situations. However, in this circumstance, the large amount of runoff from the adjacent commercial property to the north, caused this erosion structure to fail. In addition to the placement of straw bales, additional measures should have been carried out to divert runoff away from this drainage area. This is not an isolated case. There are other areas in the park that face this same problem. Wherever drainage enters the park from adjacent properties, immediate attention should be given to diverting or stopping the flow. In other areas of the park where massive amounts of hillside erosion have occurred, structural materials and soils are being placed in an effort to rebuild the slope. Without protective measures in place, this scale of erosion will have a devastating effect on more of the park.

(Photo 4)

6. Mitigation Techniques and Approach

Trying to control a process like erosion on so many disturbed sites in the park, seems overwhelming. But taking a small area at a time, erosion can be slowed and brought under control.

From an environmental standpoint, it is always preferable to use revegetation as the primary approach to land restoration. However, when the degree of erosion is so extreme, structural devices may need to be used in reclaiming disturbed sites. A variety of structural products for controlling erosion, utilize both natural and manufactured materials. These products can often be combined with vegetation to provide a more visually attractive and environmentally compatible result.

All slope protection treatments should include both short-term and long-term measures to control water and wind erosion during and after slope preparation.

7. Short-Term Treatments

Short-term treatments like mulching, applying a soil binder, or the use of erosion matting, netting or blankets, can be used to prevent soil erosion until vegetation or other long-term treatments are established. Short-term treatments should allow for water infiltration, conserve soil moisture by reducing evaporation, minimize soil temperature changes, and be non-toxic.

8. Long-Term Treatments

Long-term restoration treatments include the implementation of retaining walls, erosion matting, geomatrix grid systems and native vegetation establishment. Of the many options available, a diverse plant assemblage that reflects the environmental characteristics of the site, will out perform any manufactured product designed to control erosion.

Plant diversity enhances the success of native vegetation by reflecting natural processes, providing overall stability, and displacing alien weeds. A complex root system encourages the formation of a water-stable root structure. A variety of canopy trees and shrubs along with ground cover vegetation, provides a multi-layered protection of the ground from wind and raindrop impact. The selection of plant types should be based on specific site conditions and level of maintenance foreseen.

Erosion manifests itself in several different ways throughout the Park. Consequently, there needs to be a number of realistic and cost effective treatments to address the variety of erosion situations.

Erosion mitigation techniques (located in section B of the appendix) will be identified as either a short-term or a long-term treatment. Each will explain the desired results along with proper installation procedures and diagrams.

5.02. Overview of Stream Corridor Conditions

1. Background

The present condition of the Dry Creek stream corridor, has been shaped by years of geological and evolutionary processes and also by disturbances created by park users and adjacent developments. In the past, the management of the park was narrow visioned. The property served as a flood control/utility corridor, dumping ground for garbage and a playground for motorized vehicles.

Currently, drainage enters Dry Creek from a number of sources. The primary sources include: surplus irrigation water from Bells Canyon detention structure, storm sewer runoff from surrounding developments, surplus irrigation

water from the Sandy/Draper irrigation canal, and seeps and springs located in various areas of the park. All of these drainages are intermittent and will not support a perennial stream flow in Dry Creek.

The amount of annual water that flows through Dry Creek, does not adequately support wildlife habitat, riparian vegetation, or provide opportunities for aquatic related interpretation.

Developing a perennial water source will need to be a priority, if wildlife habitat is to be enhanced and riparian vegetation maintained. The creation of water features and other park master plan objectives, hinge on the success of a water development program. Water development opportunities are discussed in more detail in section 6, Park Hydrology.

2. Stream Instability

As a whole, Dry Creek functions properly as a stream. However, disturbances created by flood control activities, housing developments , utilities, and park users, modify natural stream flow patterns and dynamics.

Engineering recommendations to stabilize specific sections of Dry Creek are not included in this management document.. Notwithstanding, it is recommended that a qualified Fluvial Geomorphologiest be consulted. Recommendations for the stabilization and realignment for disturbed sections of Dry Creek, should be added as an addendum to this management plan.

With the recent failure of the Bells Canyon reservoir, it is expected that more water from storm events will be entering Dry Creek. Breaching of the reservoir is scheduled to take place in late fall of 1992. Following construction, all stream flows will be unobstructed. This event alone, will produce more water entering the park, but it will fall short of producing a perennial stream flow.

Two hydrology reports recently produced by the Salt Lake County Water Conservancy District, (The Bells Canyon Stream Flow Estimates and The 100 Year / 6 Hour Event Storm Data Report), are not conclusive or true scenarios for the volume of stream flows to be expected in Dry Creek, following breach construction of the dam.

The Bells Canyon Stream Flow Estimates give "Probabilities" that during a certain month, the flows will be greater than a certain Acre/Foot. The 100 Year / 6 Hour Event Storm Data, is information which describes the greatest amount of moisture in a 6 hour period within a 100 year span. If Dry Creek were designed to handle this type of event, heavy armorment would be required such as large rip-rap and concrete water ways. Design criteria for a much shorter time period, like 5, 10 or 20 years, for a 6 hour event storm, would be more realistic design strategy.

The decision to fortify the streambed is based on economics. Is it cheaper to heavily armor the stream bed and incur high construction costs or is it cheaper to go in every 10 to 20 years and make repairs to stream banks and culverts? If the decision was based on saving lives, this would outweigh the costs. But the threat to life is not great in this situation, only to natural resources and utilities. It is recommended that stream hydraulic studies should be completed, so that all stream realignment and design options are made known.

Preparing Dry Creek for the less severe storm event, is the direction which stream bank stabilization alternatives have been designed. (See Appendix, section C). With time, as the riparian vegetation becomes more stable, it will naturally armor the stream bank and will be capable of handling more severe storm events.

Recent proposals from the Sandy Canal Company to align a 20 inch pressurized irrigation pipe in the stream corridor, could effectively limit the opportunity to realign and stabilize the stream corridor. The stream corridor, from the landfill, east to where the Draper/Sandy inverted siphon is located, critically needs realignment and revegetation. The following photographs show the channelization problems that exist in this area.

Photo #5 - Located just before the landfill, this stretch of channelized streambed has a sedimentation build up problem, cause by loose and eroding embankment. The gradient is nearly flat which encourages the floodplain to widen.

(Photo 5)

Photo #6 - Further east from photo # , the stream bed is forced to flow in a straight line with unstable embankment because of a realignment constructed by Salt Lake County Flood Control during the floods of the early 1980's.

(Photo 6)

Photo #7 - The original stream bed has been obliterated throughout most of this section of stream. A flat gradient exists, forcing the flow of water to widen the flood plain.

(Photo 7)

Photo #8 - The purpose of the 1985-86' realignment of Dry Creek, was to protect adjacent residential properties from high runoff flows in the creek. The realignment of Dry Creek, was accomplished at the expense of the natural environment. Dry Creek now flows in a straight alignment, where natural curves and meanders once existed.

During realignment construction, embankments of sand and gravel were built to channelize flows within the stream corridor. This procedure has lowered the water table and had a negative effect on vegetation.

In straight channels, water currents are not uniformly distributed and deflect off one bank to the other. Sloughing of embankments and non-uniform deposition of bed loads are the result of the streams attempts to create meanders on its own.

(Photo 8)

Photo's #9 and #10 - document additional problems of the channelized streambed east of 700 East.

(Photo 9)

(Photo 10)

Photo's #11 & #12 - Over a period of many years, the erosive action of the stream has sculptured the landscape, leaving cliffs 20 to 30 feet tall. The majority of these escarpments are barren and void of vegetation. When left undisturbed by stream flows, vegetation re-claims these land features. Where stream flows meander and wash up against the escarpments, the toe of slope is vulnerable to the cutting action of the stream. When this happens, soils and vegetation slough down the slopes. Protecting the base of the slope will stabilize the upper portions of the hillside.. Revegetation of the slope can occur naturally or it can be assisted with erosion control materials.

(Photo 11)

(Photo 12)

Photo #13 - In some areas where equestrian trails cross Dry Creek, the streambed is built up by the deposition of trail soils. To a large extent, soil deposition is caused by horses but can also be connected to foot traffic. Management and development of park trails, should be responsive to this problem. The development of stream crossing features, will prevent trail soils from being deposited into the streambed by users.

(Photo 13)

Photo #14 - Water discharging from storm drainage systems, has caused irreversible damage in the stream corridor. As a result of storm water outlets being improperly located and designed, substantial portions of hillsides have been washed away. The site that has been the most severely damaged by storm water discharge, borders Dimple Dell road at approximately 2300 East.

Efforts to rebuild the the hillside with slabs of concrete, granite boulders and other fill materials, has not prevented erosion from occurring. The outlet located at the top of the slope is the problem. Until the outlet is extended

down into the stream corridor, this erosion problem will continue to wash tons of sediment into the streambed. Photo #14 (taken from the rim of the park) documents the damage that has occurred as the result of a poorly located storm sewer outlet.

(Photo 14)

Photo's #15 & #16 - (taken at the bottom of the slope in the stream bed) document the massive amounts of soil being transported down slope by storm sewer water.

(Photo 15)

(Photo 16)

Photo #17 & #18 - Examples of other storm sewer outlet problems.

(Photo 17)

(Photo 18)

Photo #19 - This outlet was designed with the proper structures in place to handle the impact of discharging water. The outlet structure prevents soil erosion by dissipating the energy of the water before it enters the Dry Creek streambed. Periodically, surplus irrigation water from the Draper/Sandy canal , is diverted into the pipe and allowed to flow into the stream.

(Photo 19)

Photo #20 - Another type of disturbance that reduces the stabilization of Dry Creek is the disposal of litter and refuse into the streambed.

(Photo 20)

Photo #21 - Children enjoy playing in Dry Creek. Here, a dam is constructed which adds unnecessary debris into the stream and damages the roots of riparian vegetation.

(Photo 21)

Photo's #22, #23 & #24 - Culvert structures modify natural stream flow patterns and dynamics.. The velocity of water increases as it passes through culverts. As high velocity stream flows exit the culvert, blow-out of streambed materials occurs. In the past, asphalt and concrete slabs have been placed near the mouth of culverts to help protect the stream bed and to dissipate the energy of the stream flow. The following three photos document examples of this problem.

(Photo 22)

(Photo 23)

(Photo 24)

Photo's #25 & #26 - The enactment of federal guidelines governing the treatment storm sewer water through the use of filtration ponds, (has not yet been researched). How this guideline might effect the way in which storm sewer water is handled in the Dry Creek drainage is not known. Several major drainage structures are located in the stream bed.

(Photo 25)

(Photo 26)

5.03. Overview of Vegetation Conditions

1. Vegetative Problems and Related Causes

Throughout the park, vegetal disturbances are evidence of the extreme human abuses which the site has endured for many years. The combination of drought years, overgrazing by domestic animals, human disturbances, and the introduction of invader plant species, have influenced the declining condition of native vegetation.

Riparian plant communities struggle for survival because of a lack of consistent moisture in the stream corridor and a lowering water table. Although grasses, shrubs and oak vegetation require less moisture than riparian vegetation, they are still threatened by the invasion of weeds, fires and uncontrolled park activities.

2. Examples of Vegetation Problems in the Park

Photo #27 - Areas of barren ground are spaced sporadically along south facing slopes. Slopes are impacted by trails which have left indelible scars on the landscape. When park users travel across slopes covered with vegetation, plant roots are severely disturbed because of the loose, sandy nature of the soil. When plant roots are disturbed, the plants ability to gather moisture and nutrients from the soil are cut off. As the plants die, there are no viable root structures to keep the soil from eroding. Once wind and water erosion begins, continual soil movement makes it difficult for natural revegetation. Instability of the soil will continue as long as the trails are in use. When the trails are abandoned, the natural processes of revegetate will begin. Even with favorable climatic conditions, the natural revegetation process takes several growing seasons.

(Photo 27)

Photo #28 - Fire damage has an extreme negative impact on native vegetation. The loss of large stands of trees, shrubs and grasses has been the result of fires. In the next growing season following a fire event, grasses will start to appear. If the burn is not too severe, the root systems of trees and shrubs will remain viable. Although there is some natural revegetation occurring in burn locations, the process is slow due to human disturbances.

The wide flood plain shown in this photograph, has no defined stream alignment. As stream flows deflect from one stream bank to another, soil is eroded and vegetation is washed away. In this situation, stream flow patterns become chaotic, and sediment is deposited in areas where it has a negative impact on vegetation.

(Photo 28)

Photo #29 - Escarpments are common land forms that occur in the Dry Creek corridor. Years of natural stream erosion have created these features. They are mostly barren and void of vegetation.

Intermittent stream flows in Dry Creek and a low water table, cause riparian vegetation to be stressed. Vegetation showing the most stress from the lack of water, are located west of 1300 East. Stands of dead cottonwood trees can also be found west of 700 East. After the alignment of the streambed was changed from its natural course, trees, shrubs and other plants became water stressed and died.

(Photo 29)

Introduced plant species (non-native vegetation) are becoming more common in the park. Russian Olive, Salt Cedar, Cheatgrass, and Annual Rye, are examples of non-native species that are competing against native vegetation for water and nutrients. These introduced species need to be selectively removed during phases of revegetation and development. Controlling the non-native species, will allow native vegetation to compete more aggressively for nutrients and moisture.

Photo #30 - The installation of utilities in the park has adversely impacted vegetation. This is apparent in the area of the aqueduct, where a scar on the landscape still persists. Other utility installations crossing through the park, have resulted in similar conditions. Repeated activities in these scar locations, also prevents vegetation from recovering.

(Photo 30)

The unique feature of the Dry Creek drainage is that examples of both vegetation and wildlife from the all four elevation and precipitation zones of the wasatch front can be found there. Dry Creek is one of eight drainages located on the Wasatch front. The drainage extends from the east side of the Salt Lake Valley from Bell's Canyon to the Jordan River.

Located at the base of the Wasatch Mountains, Dry Creek's vegetation is most typical of foothill grass-mountain brush and cottonwood riparian communities. There are species of grasses and forbs that exist in small stands in the park, that represent vegetative conditions of the Salt Lake Valley prior to pioneer settlement.

3 The Role of Native Vegetation

During the early pioneer and settlement years in the Salt Lake Valley, many of the native grasses and forbs were harvested to serve utilitarian functions as well as sources of food. Today, their roles will be much different, but no less significant. Efforts to propagate these species will help stabilize the parks environment.

Native vegetation will serve to prevent erosion of soils, enhance wildlife habitat,, and assist in restoring a more balanced environment. Figure (D-14), located in section D of the appendix, lists native vegetation that can be found within Dry Creek drainage, many of which are good candidates for seed propagation practices.

4 Vegetation Coverage and Protection

Vegetation coverage is highly variable from one area of the park to another. Shrub coverage varies from 30 to 50 percent and as high as 100 percent in other areas. Likewise, the graminoid and herbaceous groundcover is highly variable ranging from 20 percent to as high as 90 percent. There is also a considerable amount of weedy exotic species throughout much of the park. (Biowest 1989)

The remnant community type occurring within the Dimple Dell corridor may represent the last extensive stand of foothill grassland remaining on public land in the Salt Lake Valley (Harrison 1989).

The riparian vegetation occurs in a 50 to 100-foot band in the Dry Creek stream corridor, which has ephemeral to intermittent flows in the upper reaches of the park and intermittent flows in the western portion of the park. Riparian vegetation ranges from 70 to 100 percent along Dry Creek corridor with discontinuous areas along the streambed. The riparian corridor along Dry Creek is one of the most important wildlife habitat zones within the park. Its presences adds to the species diversity, biotic richness and biological productivity of the drainage corridor. The dense cover and tiered canopy of the riparian zone, provides extensive nesting opportunities for avifauna, a variety of niches for insects that sustain many of the nesting avian species, and diurnal and movement cover for mammals.

Dry Creek is an intermittent drainage without free flowing water for most of the year; however, subterranean flows maintain a vegetative complex that provides a water source for many wildlife species. The interspersion of riparian habitat with the upland shrub and grassland habitat increases the biotic diversity of the entire park. The proximity of these habitats also increases the available habitat components for the local wildlife community.

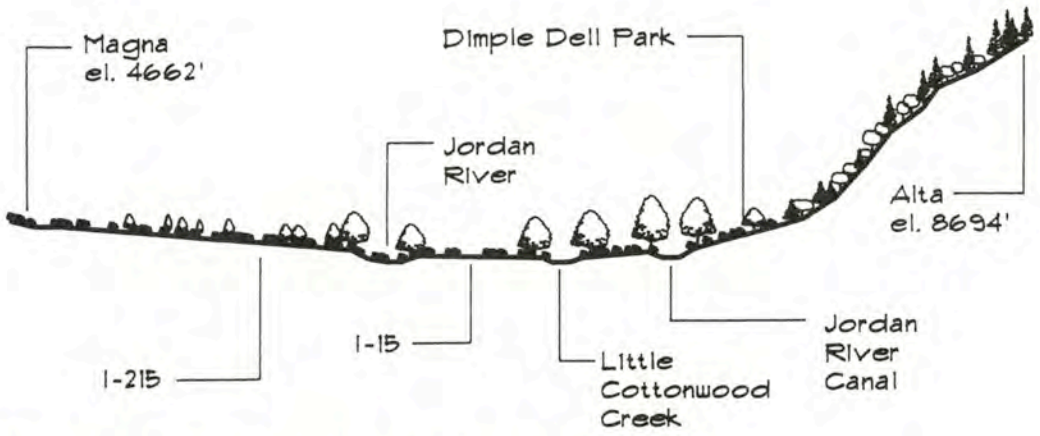
The revegetation potential of soils in the park ranges from poor to good. Most of the disturbed areas in the park have poor revegetation potentials due to the high coarse fragment content and subsequently poor water holding capacities, and low fertility. These conditions, combined with the relatively high soil erosion hazard, make stabilization of disturbed soils difficult. State-of-the-art erosion control treatments combined with revegetation with appropriate native species, will be necessary for successful revegetation of disturbed areas.

It will be difficult to establish vegetation on disturbed areas in a short time span. Inorder to establish healthy ecosystems, management practices will need to incorporate both short and long term activities.. A certain amount of trial and error of methods and practices, will be a part of the management strategy for revegetation. Management plans may sound good on paper, but the real test will be in the field. The most successful methods should give direction for additional future revegetation efforts.

If previously disturbed areas have been protected from subsequent abuse, there are many examples of secondary plant succession taking place. Only a few years of protection are necessary for native perennial grasses and forbs to become established on the site. The most important contribution that could be made toward the rehabilitation of disturbed sites, would be a restriction of use and area closures. All hiking, cycling, and horseback riding activities, need to be restricted to established trail systems or areas. Some disturbed areas will require temporary closure with fencing to allow for seedling establishment. If speeding up the recovery process on a disturbed site is necessary, artificial seeding is a treatment that should be considered. This could be the case in areas adjacent to trails or other high use areas. If trail widths can be established as narrow strips of bare ground, adjacent areas will be less vulnerable to disturbance.

Providing mitigation measures that will allow the native vegetation to closely mimic natures own propagation methods and establishment, will in the long run, help establish stable vegetation communities.

Understanding the types of critical conditions (disturbed sites) that exist in the park, provides guidance for the development of proper treatment alternatives. (located in section D of the appendix).



5. Vegetative Cross-Section of the Salt Lake Valley

Magna: elevation 4462', with 14" annual precipitation;
Vegetation: Fourwing Saltbush, Rabbit Brush, Sage Brush, Indian Ricegrass, Great Basin Wildrye, Globemallow;
Wildlife: Desert Cottontail, Jackrabbit, Lark Sparrow, American Kestrel.

Jordan River: elevation 4200', with 14" annual precipitation;
Vegetation: Narrowleaf Cottonwood, Peachleaf Willow, Sandbar Willow, Squawbush, Evening Primrose;
Wildlife: Yellow Warbler, Great Blue Heron, Chorus Frog, Western Harvest Mouse, Damselfly.

Wasatch Blvd./foothills: elevation range 4500-5500', with 22" annual precipitation;
Vegetation: Gamble Oak, Big Tooth Maple,
Mountain Mahogany, Slender Wheatgrass, Llupine;
Wildlife: Blue Gray Gnatcatcher, Rufous-sided Towhee, Silver Spotted Skipper.

Alta: elevation 8694', with 30+" annual precipitation;
Vegetation: Aspen, Logdge Pole Pine, Douglas Fir, Snowberry, Aster.
Wildlife: Pygmy Nuthatch, Least Chipmunk, Chickadee, Common Blue Butterfly.

5.04. Overview of Trail Conditions

1. Trail Problems and Related Causes

The trails at Dimple Dell Regional Park receive heavy use from equestrians, hikers, mountain bike enthusiasts and many others. The number of trails has increased in the last several years, to the point where a virtual spider-web of trails run throughout the Park. Primary trails allow park users to get from one trail head to another, causing relatively little impact to the parks environment. Secondary and tertiary trails, perpetrate the majority trail related site disturbances.

The disturbances created by the network of trails, can be seen from several observation points in the park. Trails create more park-wide disturbances than any other land use allowed in the park.

Trails also cause negative impacts to the stream. As park users enter the Dry Creek corridor and cross the stream, either on horse back or on foot, they disturb the stream bank and transport soil into the streambed.

The high number of trails also has a negative impact on the wildlife in the park. Much of their habitat is sectioned up by the spider-web trails. Because trails are found in all areas of the park, there are virtually no areas in the park where the negative impacts of human activity can not be found.

The vast network of trails is perplexing to inexperienced park visitors. First time trail users, can easily become side tracked, end up in the wrong place, have to double back or even cut a new trail to get back to familiar ground.

2. An Established Trail System

The purpose of Dimple Dell Regional Park is to provide people with quality experiences in a "nature dominated environment". The realization of this purpose, will be fulfilled as wildlife habitats are preserved and improved, erosion problems rehabilitated, and native vegetation is restored. The successful accomplishment of these tasks, hinge on the establishment of a well defined and regulated trail system throughout the entire park.

Trail systems must be properly located to avoid disturbing extremely sensitive environments. They must also be designed and constructed to provide protection to surrounding environments. The success of the park trail system, will be measured in part, by how well the natural environment responds to the lack of disturbance.

Trails must also be sensitive to user needs. Users should know their location at any point along the trail. Trail design should accommodate all levels of users, from beginners to experts. Above all, trail systems should allow users to enjoy the park to the fullest extent possible, without causing major disturbances.

3. Examples of Trail Disturbances

Photo #31 - After several years of trail use, equestrian activities have eroded 6 feet of this embankment. The majority of the soil removed from this site, has ended up in the streambed.

(Photo 31)

Photo #32 - Several large storm drainage structures have been constructed on steep slopes in the park. Trail disturbances are commonly found on top of or near these structures. A majority of these existing utility sites, have never recovered from disturbances caused by construction activities. Repeated trail activities on these sites, also prevent the recovery of desirable vegetation.

Photo #33 - Trails that cross the streambed cause stream bank instability and erosion problems. As the fragile stream bank is worn away by trail activities, the flood plain widens and vegetation in the area is threatened.

(Photo 32)

(Photo 33)

(Photo 34)

(Photo 35)

(Photo 36)

Photo #34 - Sandy soil is predominately found throughout the Dry Creek Drainage and is on of the reason why equestrians enjoy riding in the park. Even though sand provides an excellent base for horseback riding, it does not hold up to wind and water erosion. Native vegetation (especially grasses) growing along the edge of sandy trails parish when challenged by wind erosion. When vegetation no longer exists to battle erosion, the trail naturally widens.

Hikers become fatigued from walking on trails with deep sand. When confronted with soft sandy trails, most hikers will walk on the edge of the trail where the surface is more firm and stable. As vegetation is trampled, the trail edge becomes less stable which also encourages the trail to widen.

Photos #35, 36 - A network of trails originating from the backyards of adjacent residential properties, cause severe disturbances to hillside environments. Most of these trails run perpendicular to the contour of the slope, which multiplies erosion problems and the destruction of vegetation.

See Section A in the appendix for trail development structures and trail treatment alternatives.

5.05. OVERVIEW OF LANDFILL CONDITIONS

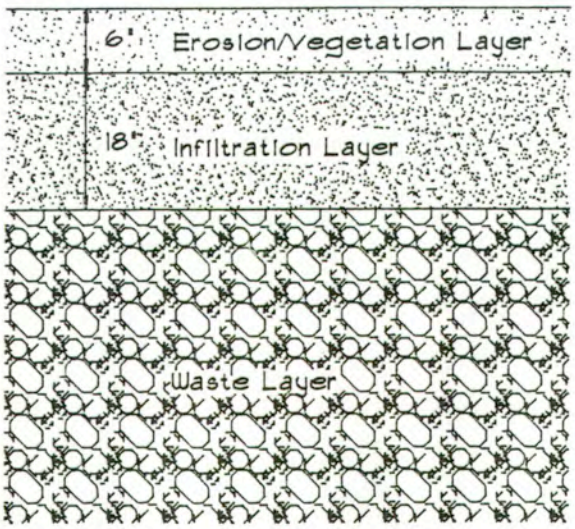
1. Historical Perspective of Landfill

In the 1960's and early 70's, the parcel of land located in the extreme west portion of Dimple Dell Regional, was used as a landfill by Sandy City. In 1974, sparse residential development existed in the vicinity of the dump. Primarily agricultural land uses surrounded the landfill during its active period.

When the landfill reached its capacity and was closed to any additional dumping, proper closure procedures and treatments were not performed. When measured against contemporary landfill closure rules and regulations, this landfill fails to comply in every category.

2. Closure and Post-Closure Care of Landfills

The new landfill closure rule stipulates that landfills must develop a closure plan and install a final cover that minimizes both erosion and infiltration of liquids into the landfill. The cover must consist of an erosion/vegetative layer that is a minimum of 6 inches thick and capable of sustaining plant growth. In addition, it must have an infiltration layer that is a minimum of 18 inches thick and has a permeability less than or equal to that of the bottom liner system or the natural subsoils present, or a permeability no greater than 1 x 10^{-5} cm/sec. whichever is less.



Post-closure care of the landfill must be conducted for 30 years, including maintaining the final cover, monitoring groundwater, landfill gas, and managing leachate.

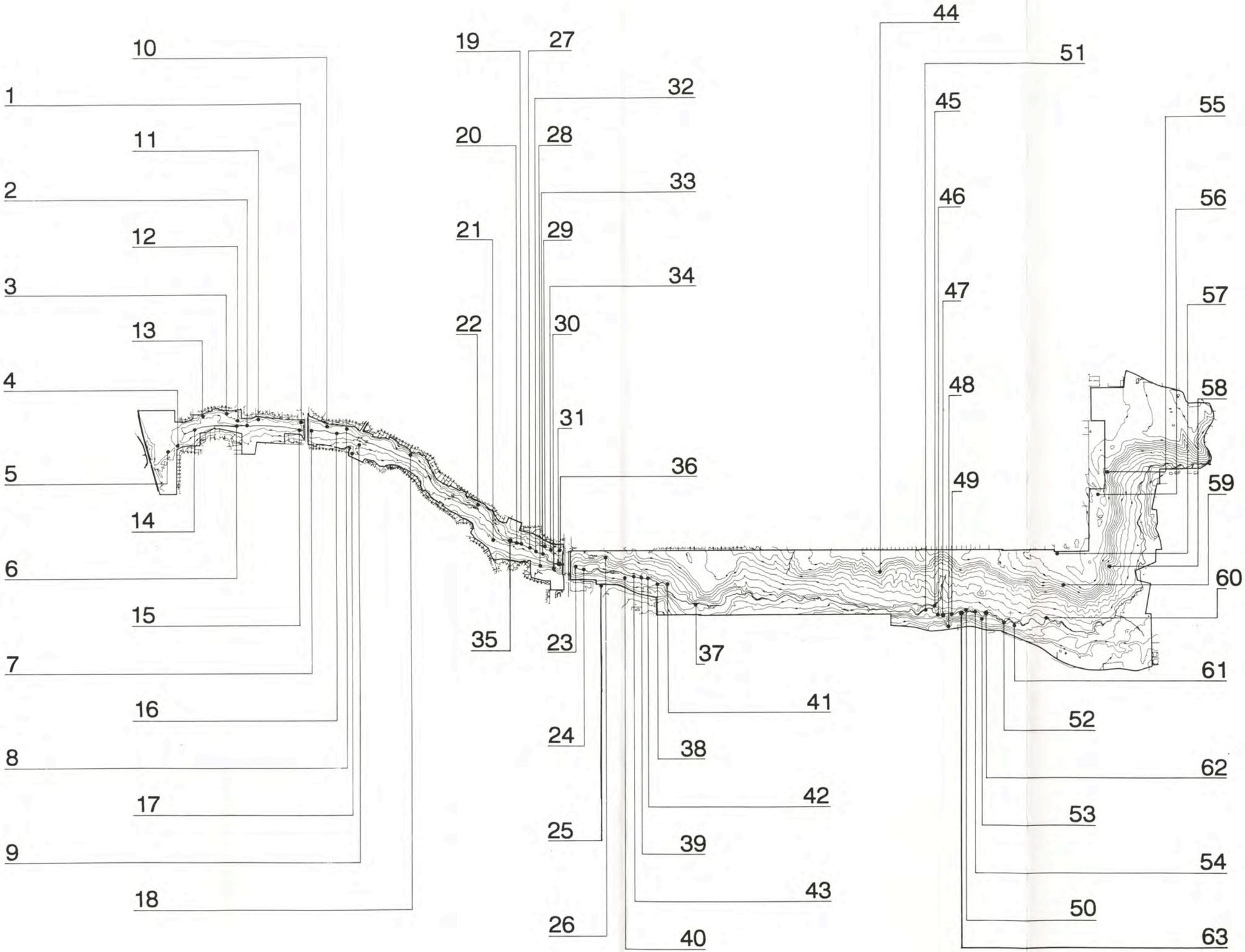
Photo #37 - shows current conditions at the dump site.

(Photo 37)

Although dumping garbage and debris is prohibited within the park, indiscriminate dumping continues to happen.

Photo #38 - Salt Lake County, concerned citizens and local residences are escalating their efforts to stop the disposal of refuse inside the park.

(Photo 38)



5.06.
Critical Conditions

Photograph Location Key

A) This area has been disturbed by user trails, brush fires and the construction of the 700 East roadway. Soil erosion has increased following each of these disturbances. B) The native trees and shrubs are water stressed from six years of drought conditions. C) Only annual grasses and noxious weeds are found growing on the steep embankment of the 700 East roadway.

A) Dry Creeks modified stream alignment has diverted water away from riparian vegetation zones. Some areas of vegetation are beyond the stressed level and are in jeopardy of dying. As native vegetation does dye, barren ground areas develop and soil erosion excelorates. B) The maintenance road and user trails that cross Dry Creek, add to the erosion of embankment which contributes additional sedimentation into the streambed.

A) User trails located on steep erodible slopes initiate soil erosion and the loss of native vegetation. B) Refuse and garbage piles deposited inside park boundaries by local residences are a health and fire hazard to park users and adjacent landowners. C) The amount of barren ground where no native vegetation is growing is very high in this area. D) Highly competitive annual grasses and noxious weeds need to be removed from this area and replaced with native grasses.

A) Storm water runoff was the cause of the severe wash out in this ravine. A storm sewer outlet designed to prevent soil erosion could have prevented this problem.

A) The proper closure of this inactive landfill is incomplete according to the standards for municipal solid waste landfills. Regulations which this landfill violate are: a sufficient protective layer of soil burying the refuse, surface water control, monitoring of methane gas, and establishment of a stable vegetation to prevent soil erosion. B) Ground stability for the construction of structures is considered to be poor on this site.

A) In some stretches of Dry Creek the flood plain is very wide and void of vegetation. B) Stream banks are steep and consist of loose noncompacted soils. C) Undesirable vegetation such as Salt Cedar, Russian Olive, and Siberian Elm are competing against native plants for soil nutrients and moisture. D) Annual grasses and exotic weeds also dominate this section of the park.

A) This section of Dry Creek is a good example of a stable streambed. Its strengths are: a healthy riparian community along the streambank, cobble rock lining of the streambed, and a stable water flow gradient. B) Stream "blow-out" at the outflow end of the culvert is a problem and prevents safe passage for trail users.

A) Brush fires inside the park cause long-term damage. Natural revegetation of the burn site will take many years because of harsh site environments. B) Annual grasses and weeds dominate the site following fire events. C) Soil erosion on steep hillsides is high because of the sandy soil types.

A) This outlet structure disposes of surplus irrigation water from the Sandy/Draper canal into Dry Creek. This structure is a good example of a properly designed culvert outlet that releases water into the Dry Creek streambed without damaging the environment. The erosive water forces are dissipated by locating a barrel filled with rocks beneath the outlet.

10

A) In areas of the park where high use is expected, measures need to be taken to prevent further loss of soil and vegetation. At this trail junction, the bottom of the slope is highly erodible and loose. Stabilizing this slope will insure that the trail will remain safe for use. B) Existing vegetation above the erosion scar will continue to slough down the slope until this erosion problem is stabilized.

11

A) Trails originating at the fence line of adjacent residential properties, cause tremendous damage to steep slopes and vegetation. Prohibiting these indiscriminate trail entrances will help the fragile slope environments recover from trail disturbances.

12

A) Same as Photo 11

13

A) Same as Photo 11

14

A) Maintaining a workable flow gradient in this section of Dry Creek is a constant effort for county flood control personnel. The erosion and deposition of adjacent streambanks into the streambed, is the cause of the problem. It is important to keep this section of Dry Creek flowing and minimize the amount of sediment transported through the culvert beneath the landfill. B) A high percentage of vegetation in this area is either stressed or strained.

15

A) Historically, streambank protection at the outflow end of this culvert has involved the placement of concrete slabs. Although it is not the most attractive method in preventing streambank erosion, it is inexpensive and effective. B) Development of a safe trail leading into the culvert is critical. C) Vegetation on the slope of the 700 East roadway consists primarily of annual grasses and noxious weeds. Roadway slopes at 700 East and 1300 East should be included on future plans for native revegetation and erosion control.

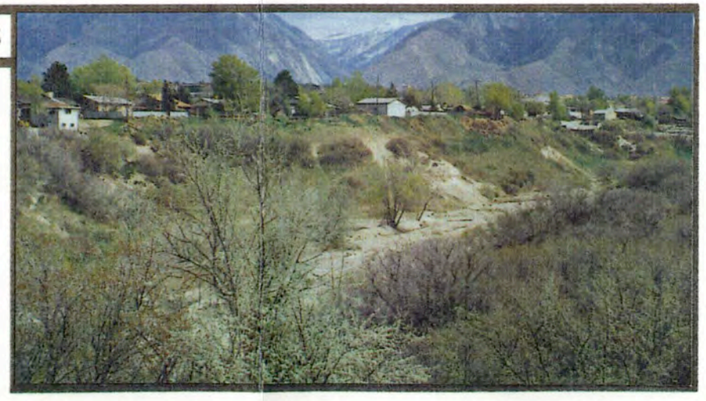
16

A) The modified alignment of Dry Creek in this specific area is unnatural in its appearance. Wide flood plains void of vegetation remain as a result of disturbances and stream alignment modifications. B) Vegetation communities in the area are water stressed.

17

A) Maintaining fences at park boundaries is crucial to stopping the disposal of garbage and yard refuse inside the park.

18



A) Trails entering the park from adjacent residences and roads, disturb fragile vegetation and steep hillside environments. B) West of 1300 East, refuse disposal occurs along much of the north property line.

19

A) Brush fires occuring inside the park, whether they are manmade or natural, should be extinguished as quickly as possible. Harsh site environments, such as those present inside the park, slow the recovery of vegetation following a fire. B) The first succession of plants that inhabit a burn site, are the undesirable annual grasses and noxious weeds.

22

A) Bicycle and pedestrian trail use on this south facing slope are the primary causes for this disturbance. Several walking trails also converge on the slope from adjoining residential properties. Trail users churn up the soil frequently and vegetation is never able to recover. B) Slopes disturbed to this degree, need to be closed for landscape rehabilitation.

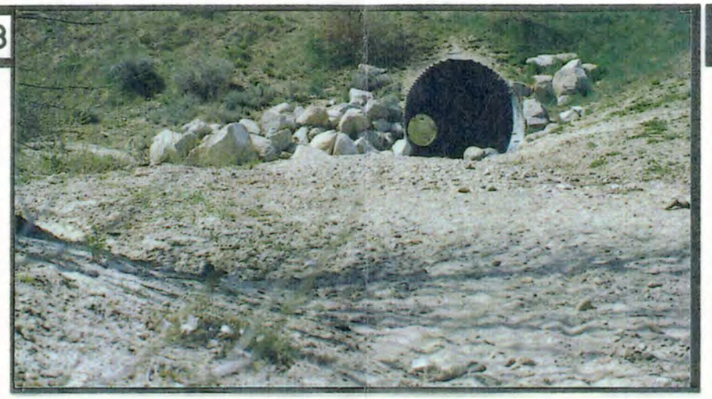
25

A) Before shredded bark chips were placed on this equestrian trail, soil erosion was out of control. Even though the slope continues to erode, erosion has slowed and the trail is safer for all park users. B) The placement of shredded wood chips on trails, serves to prevent trails from widening.

20

A) Stream flow volocities increase when passing through culverts. As flows exit culverts, increased streambank erosion occurs. B) Bridge structures rather than culverts, allow the stream to be more free flowing and will mitigate areas of streambank erosion caused by culvert structures.

23



A) The build up of soil deposition east of 1300 East, 700 East and the landfill, is characteristic of Dry Creeks flow patterns. At these locations, the dimension of the floodplain is wide and riparian vegetation is sparse. B) The corrigation of the culvert pipe beneath 1300 East, does not provide a sure footing for trail users, especially equestrian users.

26

A) Using bales of straw to stabilize erosion should only be a temporary solution to a long term problem. Maintenance of the bale structures is necessary to extended the usefulness of this type of erosion mitigation. Stopping the drainage of water from entering the park from adjacent properties, will help prevent this type of damage.

21

A) The upper portion of this slope, located next to a user trail, dropped two feet after being saturated by water draining from an adjacent property. Stopping drainage patterns from entering the park from adjacent properties, will help prevent future erosion problems of this magnitude.

24

A) Vegetation that does exist in the stream corridor, struggles to survive because of a lack of perennial stream flows in Dry Creek. Establishing a perennial flow of water in Dry Creek will improve vegetation conditions.

27

A) The most stable riparian community that exists in the Dry Creek corridor is located immediately west of the 1300 East road crossing. Riparian vegetation naturally protects the streambank from damaging water flows. B) Riparian vegetation also offers the richest environments for a variety of wildlife.

28

A) Grasses and shrubs on this north facing slope are becoming re-established following a fire which damaged the environment. These disturbances are most difficult to treat. Weeds must be controlled to reduce competition to newly developing vegetation. Repeated activities that prevent the recovery of desirable native species, must be stopped.

29

A) South facing slopes are naturally dry, hot exposures. Following any major disturbance, these sites have a difficult time reclaiming the ground with desirable vegetation. Soil erosion on disturbed slopes occurs unabated. In the summer of 1991, this area experienced a brush fire which is still very much evident by the black and barren slopes. The first succession of vegetation on disturbed sites are annual grasses and exotic weeds. These varieties of vegetation must be controlled if native vegetation is to dominate in the park.

30

A) Steep sandy escarpments are common landforms found in the Dry Creek stream corridor. These escarpments have evolved over time from natural stream and wind erosion. All efforts should be made to keep trails off of and away from these escarpments to prevent accidents and further soil erosion.

31

A) Stream flow velocities increase when passing through culverts. On the west side of the 1300 East road crossing, the streambed drops approximately two feet as it leaves the culvert. B) Trail conditions entering the culvert are awkward and dangerous because of the number of large bolders and elevation change.

32

A) The disposal of refuse in the park is generally no longer the problem that it once was years ago. In some areas west of 1300 East, the occurrence of this problem is higher. Abandon bicycles and tires found in this area of the park can be attributed to local children playing with refuse left along residential fence lines.

33

A) This south facing slope was disturbed by a brush fire in 1990. Disturbed sites usually support annual or perennial weeds. In many situations, cheatgrass brome and numbers of other annual grasses or broadleaf weeds dominate these sites. It is advisable to remove existing weeds, as they provide a source of seed that facilitates further spread of undesirable vegetation.

34

A) Even though fire damaged this Oakbrush Sumacs foliage and branches, the shrub is still viable and is spouting new growth from the base of the plant.

35

A) The asphalt path located at 1000 East, helps to minimize environmental disturbances which the dirt trails tend to perpetuate. Although some drainage problems occur as a result of the hard surface, the vegetation adjacent to the path is disturbed very little.

36

A) The installation of this storm drainage structure and construction of the 1300 East road crossing initiated this erosional disturbance. Left alone, with no efforts to revegetate or mitigate the erosion, the slope has developed severe gullies. B) A secure footing for pedestrians who walk straight down the trail, does not exist. Trails like these should be improved with a series of switchbacks or relocated away from the severe erosion areas.

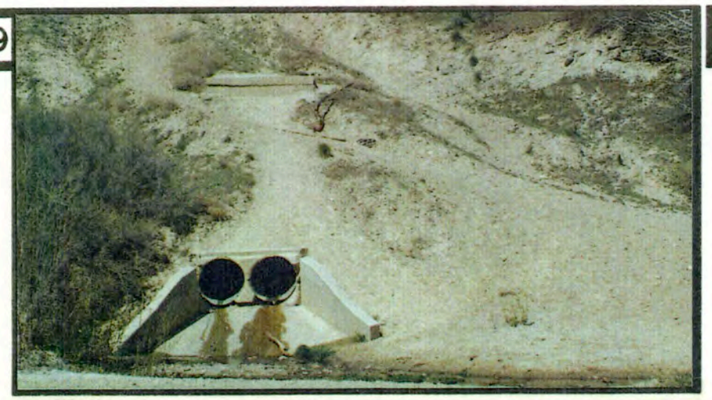
37

A) Damming up the stream to create ponds and pools, is a common activity for children playing in the park. B) This disrubance is extremely damaging to plant root systems and stable streambanks.

38

A) The location of this storm drainage outlet is closer to the streambed than most other outlets in the park. However, a lack of reinforcement to the streambank prevented the culvert from remaining stable. The streambank will continue to erode until reinforcement of the streambank takes place and a properly designed outlet is constructed.

39



A) Trails aligned on top of utilities, perpetuately erode soils into Dry Creek. Additionally, the barren ground associated with nearly all utility locations, remains without vegetation because of relentless trail usage. B) Because of splashing noises, most equestrian users are very cautious when riding past this particular outlet. Water spilling onto the concrete apron, startles most horses.

40

A) This man made pond has become a popular playing area for children and also an area for refuse disposal. B) Stagnate water in the pond is favorable habitat for mosquitoes and other insects. C) Playing conditions for small childrens around the pond, are not safe.

41

A) Generally, vandalism in the park is not a problem. However, in secluded areas, vandalism occurs frequently.

42

A) The clearing of tree trunks and branches from this section of Dry Creek, has opened up the corridor, allowing higher velocity stream flows. The faster the stream is permitted to flow, the higher the potential will be for excessive stream bank erosion during extreme flood events.

43

Same as Photo 42

44

A) Secondary trails which lead down the north rim slope, need to be selectively closed to protect sensitive hillside environments. In the past, park users have been accustom to uninhibited movement and activities within the park. Designated trail alignments and the creation of switch backs on steep slopes will greatly reduce the number of hillside trail abuses.

45

A) Years of natural drainage from higher elevations in the park, created this ravine. Some native vegetation is becoming established in the ravine because of reduced site disturbances. B) As native vegetation recovers in washes and ravines, excellent habitat for wildlife is created.

46

A) The build-up of soils in this section of Dry Creek, is the direct result of a poorly located storm drainage outlet on the south rim of the park. Fill material recently placed on the eroded slope continues to be washed into Dry Creek. The ultimate solution should involve extending the drainage pipe and locating the outlet so that water can be disposed directly into the streambed.

47

Same as Photo 46

48

Same as Photo 46

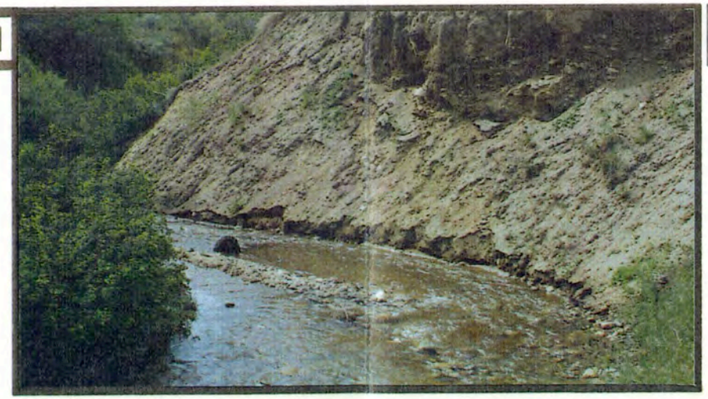
49

A) Transporting soil sediment is a natural process of waterways. Utilities that contribute excessive amounts of sediment into the streambed, not only cause disruptions in the streams ability to transport sediment, they also change stream flow patterns.

50

A) Steep erodible escarpments along Dry Creek eventually stabilize if they are left undisturbed by trails and additional cutting action of the stream. These steep slopes may at first be perceived as a critical site condition, but they are actually geologic formations which require protection. B) Birds and other wildlife take advantage of these cliff formations to make nests and also for places of protection.

51



A) In several locations along Dry Creek, stream flows actively cut away and erode steep hillsides. In most cases, this natural process should be left alone. Only in areas where either utilities or other valuable property is in jeopardy, should an erosion control structure be implemented.

52

Same as Photo 51

53

Same as Photo 51

54

A) Trails similar to this one, contribute a large amount of sediment into Dry Creek unnecessarily. An equestrian/hiker trail crossing structure would be appropriate for trails creating this problem.

55

A) When a residential sub-division was developed west of this location, a log fence and retaining wall were constructed. The fence now serves to delineate the park boundary and discourage indiscriminate entry into the park. B) The retaining wall which supports the realigned trail, needs to be constructed better. When constructing any structures in the park, materials and construction techniques should have a long life expectancy.

58

A) Utility installation scars are visible from several locations in the park. Many of these utility corridors have been used as trails for so many year, that native vegetation has never had a chance to recover and stabilize these disturbed areas.

61

Same As Photo 54

56

A) A horseback rider was probably the initial disturbance which created this trail. B) Continued wind and rain erosion, prevents vegetation from reclaiming this trail. Grasses and other native plant life, struggle to keep a foothold in this loose soil, which is constantly being relocated by the wind.

59

Same as Photo 58

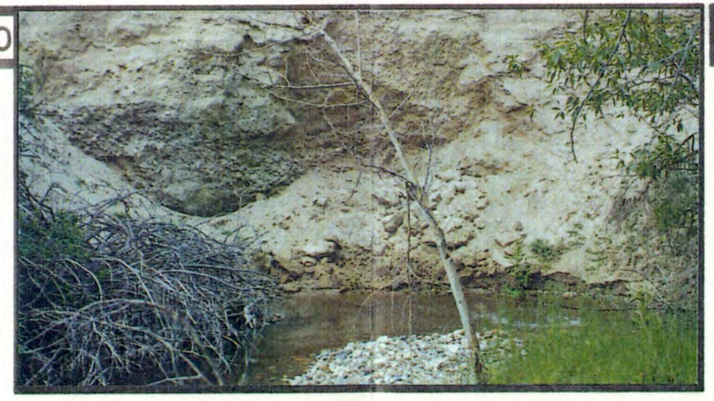
62

Same as Photo 61

57

A) Until recently, residences living adjacent to the north rim of the Park, were bothered by the build up of drifting sand against their homes. This problem occurs primarily in the vicinity of the Salt Lake aqueduct and abandon sand pit areas. However, the problem does exists to a lesser degree, all along the north rim. Dispersing shredded woodchips on the surface of trails, has kept the sand from migrating into residential and other nearby areas.

60



Same as Photo 51

63

A) During spring runoff in 1992, water flowed the entire length of the park for several weeks. As runoff volumes decreased, flowing water in the streambed became sporadic. In some places, because of the soil types, 100 percent of the stream flow was absorbed into the ground. B) Having a more perennial flow of water in Dry Creek, will provide for a more diverse riparian community in the stream corridor.

PARK HYDROLOGY SECTION 6

6.01. Water Development Objective

Developing a more consistent and perennial flow of water in the Dry Creek streambed is an objective of the current master plan. Accomplishing this task will help to improve the quality and quantity of existing vegetation which in turn will support a higher diversity of wildlife in the park. The general topics covered in this section will be to analysis what water sources are available to draw from, and what are the best environmentally sound methods and alternatives in developing Dry Creeks streambed for more perennial flows, ponds and riparian zones.

Guidelines for the development of water in Dry Creek are:

1) Development must mimic natural systems as close as possible.

2) The ability of Dry Creek to transportation sediment must not be diminished by development.

3) Any change in character or alignment of the streambed must not negatively impact surrounding vegetation dependent on the intermittent flows.

4) Development of water features must comply with health and safety concerns and regulations.

5) Where possible, create natural stream features like oxbows or pools.

6.02. Existing Conditions

With the recent breaching of the Lower Bells Canyon reservoir, it is expected to that Dry Creek will receive more annual spring runoff and seasonal storm runoff that would have normally been detained by the reservoir. The frequency of water placed into Dry Creek will be less often, but when it does flow into the streambed, it will be greater in volume than normal. The greater volumes of water will have a negative impact on riparian vegetation and create additional erosion probelms. Irrigation companies will continue to capture their apportionment of water from the reservoir and if any surplus water exists, it will enter the Dry Creek streambed. The breaching of Bells Canyon reservoir is designed to handle extreme storm events and prevent flooding. It is expected that breach constrution will take place in the fall of 1992. Drainage of surplus flows from Bells Canyon will be allowed to flow over the control structure and follow the natural drainage course. The surplus flow of residual water alone, will not insure that stream flows inside the park will be continuous throughout the year. With this in mind, other feasible water sources available for use by Salt Lake County must be considered in the creation of water features. Currently their are four water sources that Salt Lake County can draw from.

6.03. Bells Canyon Water

Bells canyon water is generated from annual spring runoff, springs, and storm events which drain within the Bells Canyon drainage area. For many years this water source has been captured and stored in the Bells Canyon reservoir and distributed to three irrigation companies. Recent structural failure of the dam has dramatically changed the function that this reservoir will play in supplying irrigation water. Its new function will be to serve as a flow-through structure and detention structure for extreme storm events. The three irrigation companies controlling this water source are:

1) Draper Irrigation Company (7 Parts)

2) Bell Canyon Irrigation Company (6 Parts)

Major Stock Holders Are:
a) Sandy City
b) Salt Lake County Water Conserv. Dist.
c) Larkin Mortuary & Cemetery

3) North Dry Creek Irrg. Company (1 Part)

(Salt Lake County owns 30 shares which flows down Dry Creek)

6.04. Salt Lake Metropolitan Water District Aqueduct

A 12" turnout exists on the aqueduct pipe which could provide Salt Lake County with the ability to draw from this water source. At the present time though, the Salt Lake Metropolitan Water District is cutting back service to all non-culinary users. No legal agreements exist which obligates the water district to provide any water to Salt Lake County. Six years of drought in the great basin is taking its toll on water reserves. Even if the drought did not exist, the priority for water use would be low for Dimple Dell Park. In the year 2005, C.U.P. water will become available for use by the water district. At that time, more water will be available for use, but the volume of the aqueduct will remain the same. The cost of water usage is $50/Acre Foot. An allotment of 500 Acre feet/year could potentially be drawn from this source. Because Dimple Dell Park will not be using this water for culinary uses, the County will only be able to use surplus water. Salt Lake County has a usage agreement with the Salt Lake Metropolitan Water District which places Dimple Dell Park fourth on a user priority list. First on the list of users is Salt Lake City, second is Sandy City, third is Salt Lake Water Conservancy, and fourth is Salt Lake County.

6.05. Well Site/Water Tank & Pump House

The existing well and water right located in the eastern portion of the park was created in 1952. It was originally used for metropolitan uses along with a reservoir tank. Currently it is not in operation but was tested in the fall of 1991 when it pumped approximately 225 to 270 GPM. The well shaft is 16 inches in diameter with a 12" pipe inside. The well right has an apportionment of 3500 GPM total, but the state has posed a moratorium of 1/2 usage on wells in the area which equates to (1/2 times 3500 = 1800 GPM). Necessary requirements to evaluate the well for usage would be to:

1) evaluate working condition of existing pump and piping system

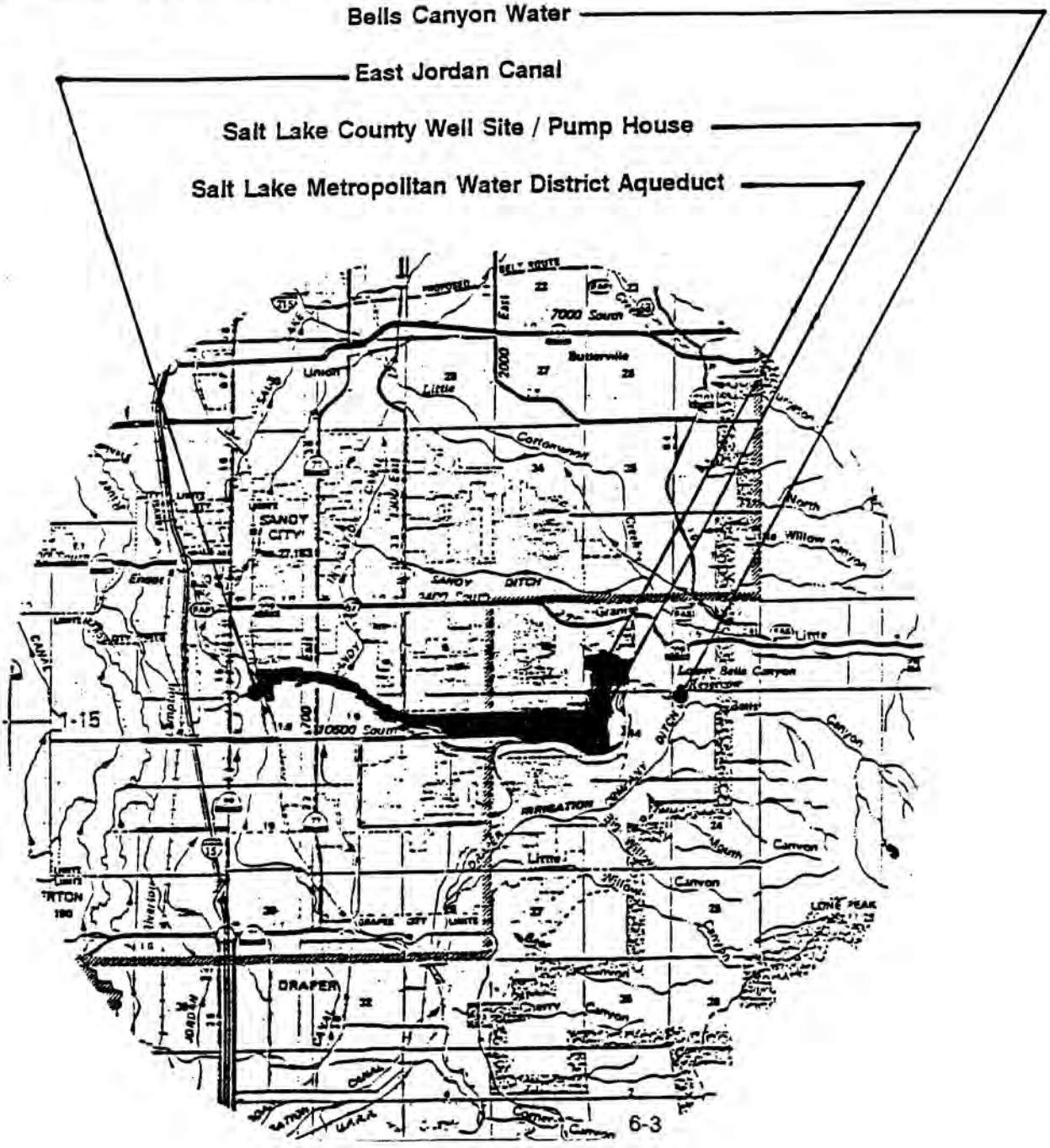
2) test for draw down levels

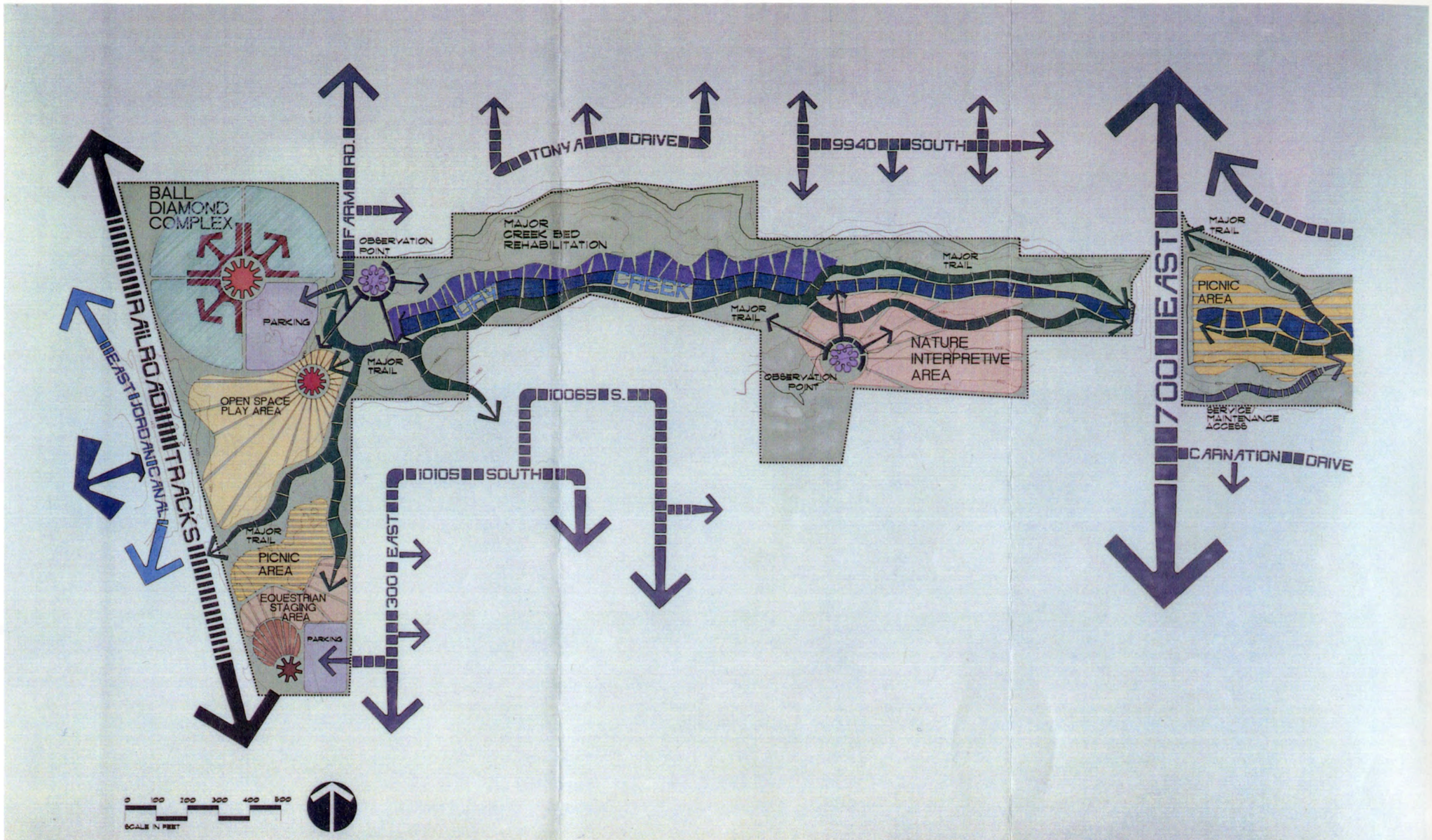
3) evaluate condition of reservoir tank and potential usage. If sufficient ground water is not available at this well site, evaluate the feasibility for drilling a new well. The existing well right must be put into use by April 1994 or the use will be withdrawn.

6.06. East Jordan Canal

The East Jordan Canal is located directly west of the landfill across the railroad tracks. Salt Lake County currently owns 44 shares of this water. An inexpensive low volume pump station would be a feasible method of acquiring irrigation water for activities in the west portion of the park. With a 44 share apportionment, Dimple Dell Park could expect to have 22 irrigation hours per week.

6.07. Water Source Locations

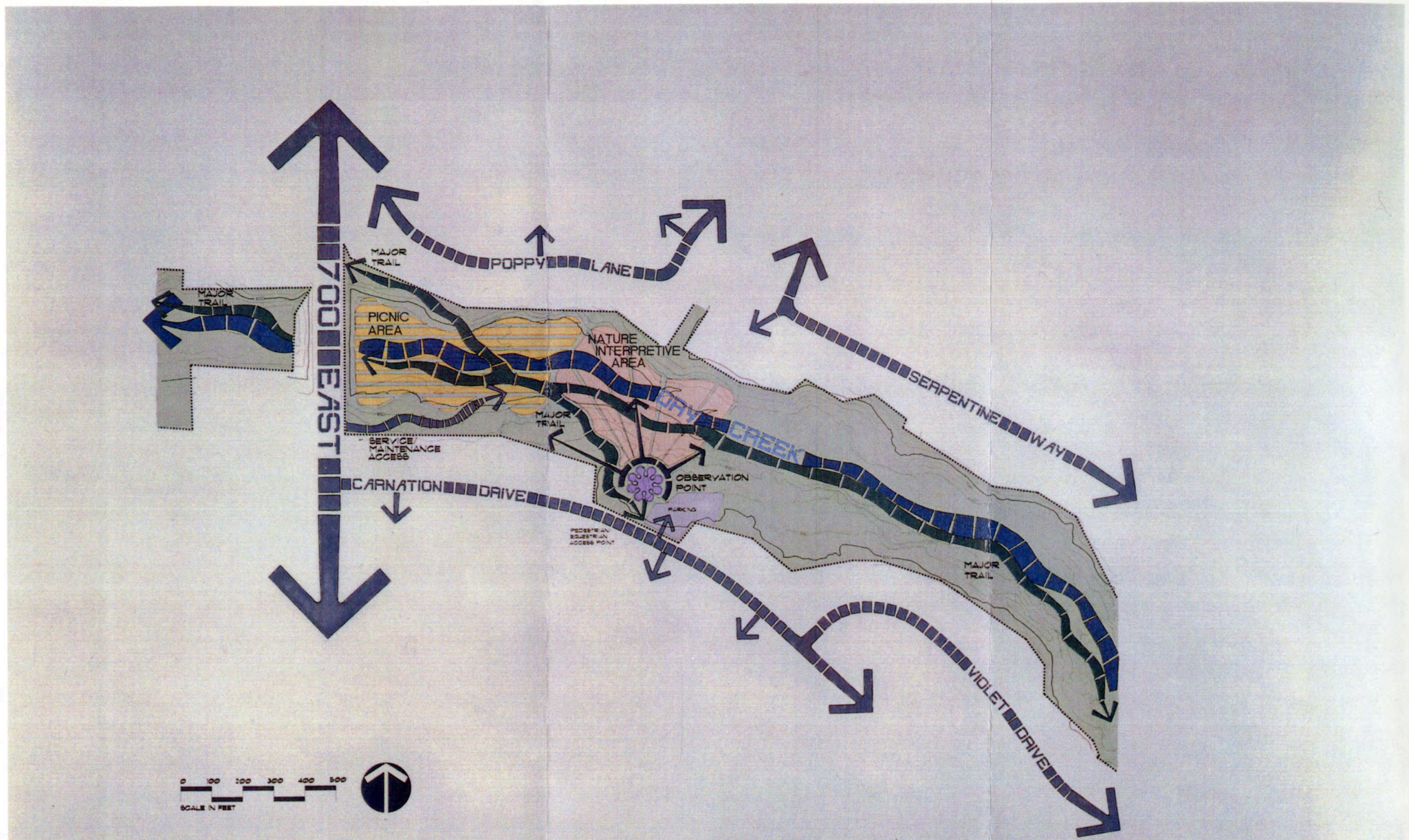




DESIGN CONCEPT 1

Dimple Dell Regional Park
Sandy, Utah

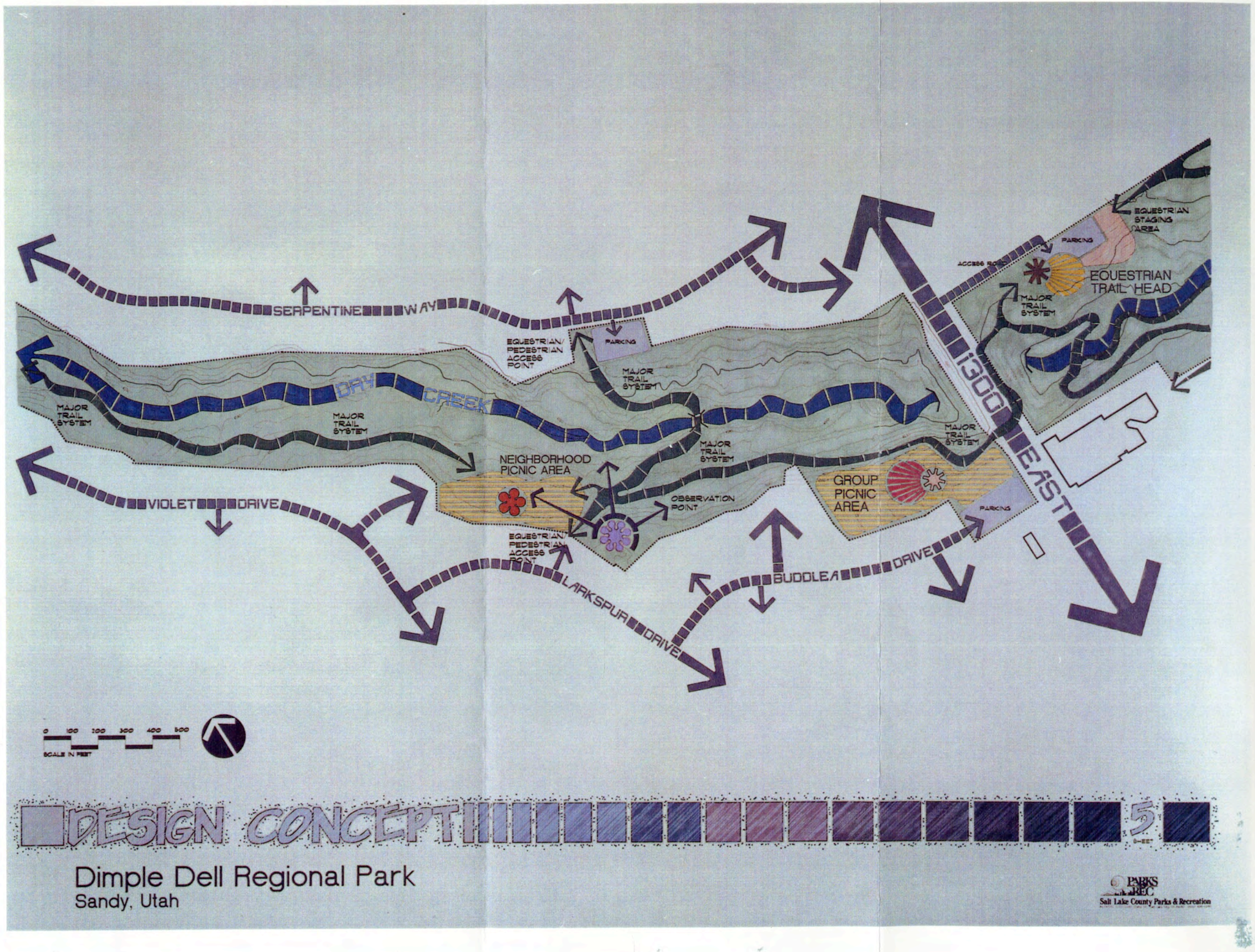
Salt Lake County Parks & Recreation



DESIGN CONCEPT 6

Dimple Dell Regional Park
Sandy, Utah

PARKS & REC
Salt Lake County Parks & Recreation

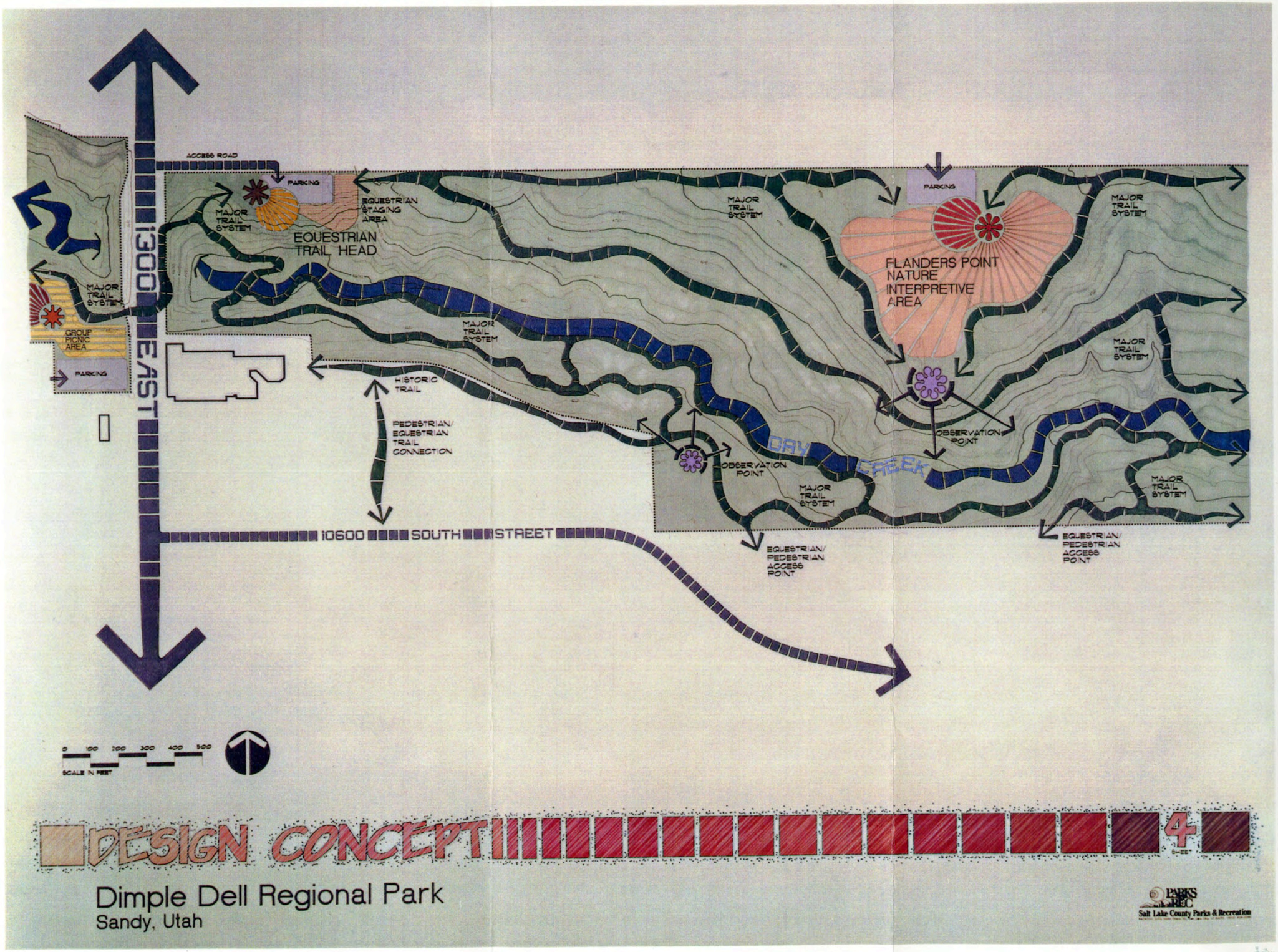


DESIGN CONCEPT

5 SHEET

Dimple Dell Regional Park
Sandy, Utah

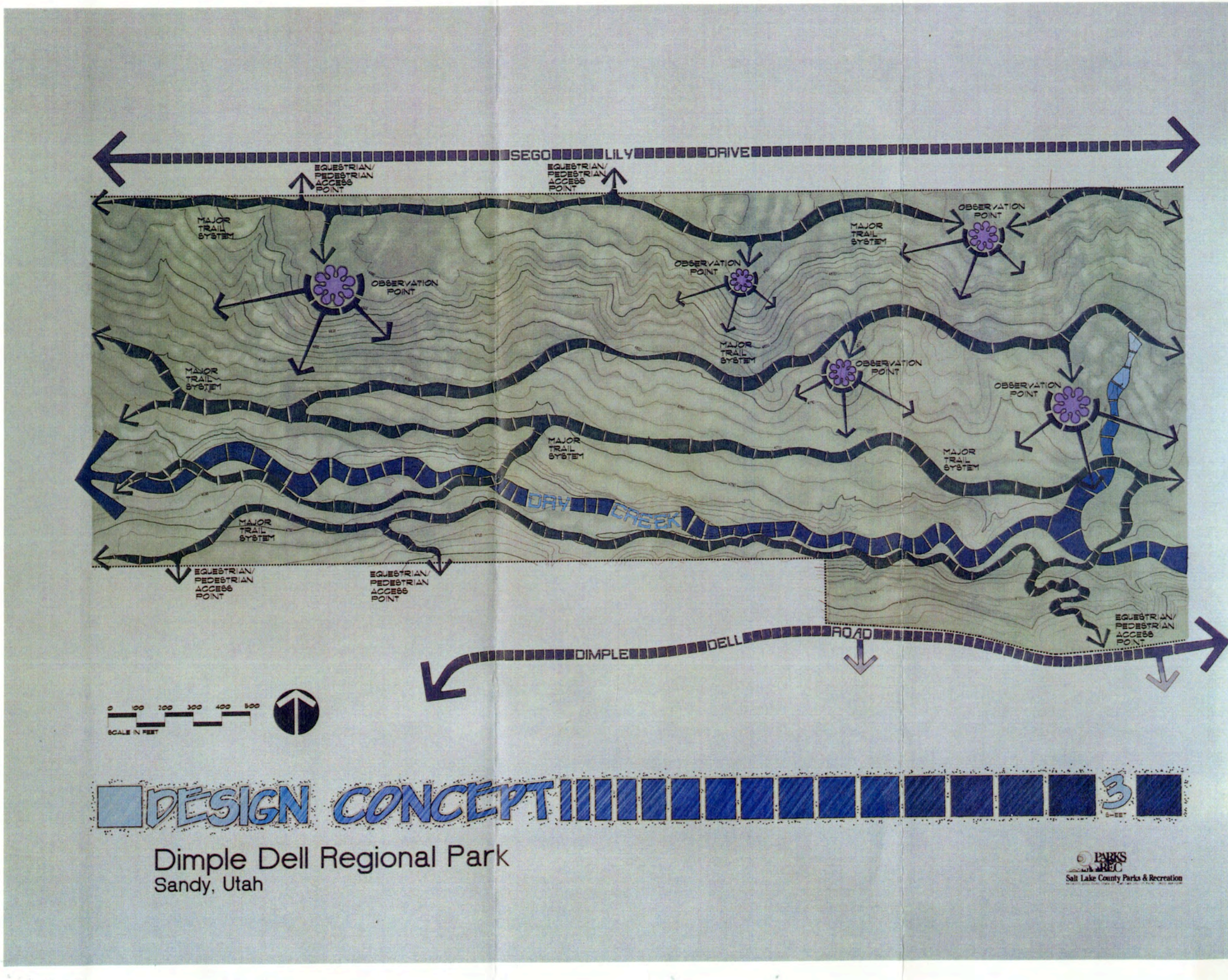
PARKS & REC
Salt Lake County Parks & Recreation



DESIGN CONCEPT 4

Dimple Dell Regional Park
Sandy, Utah

Salt Lake County Parks & Recreation

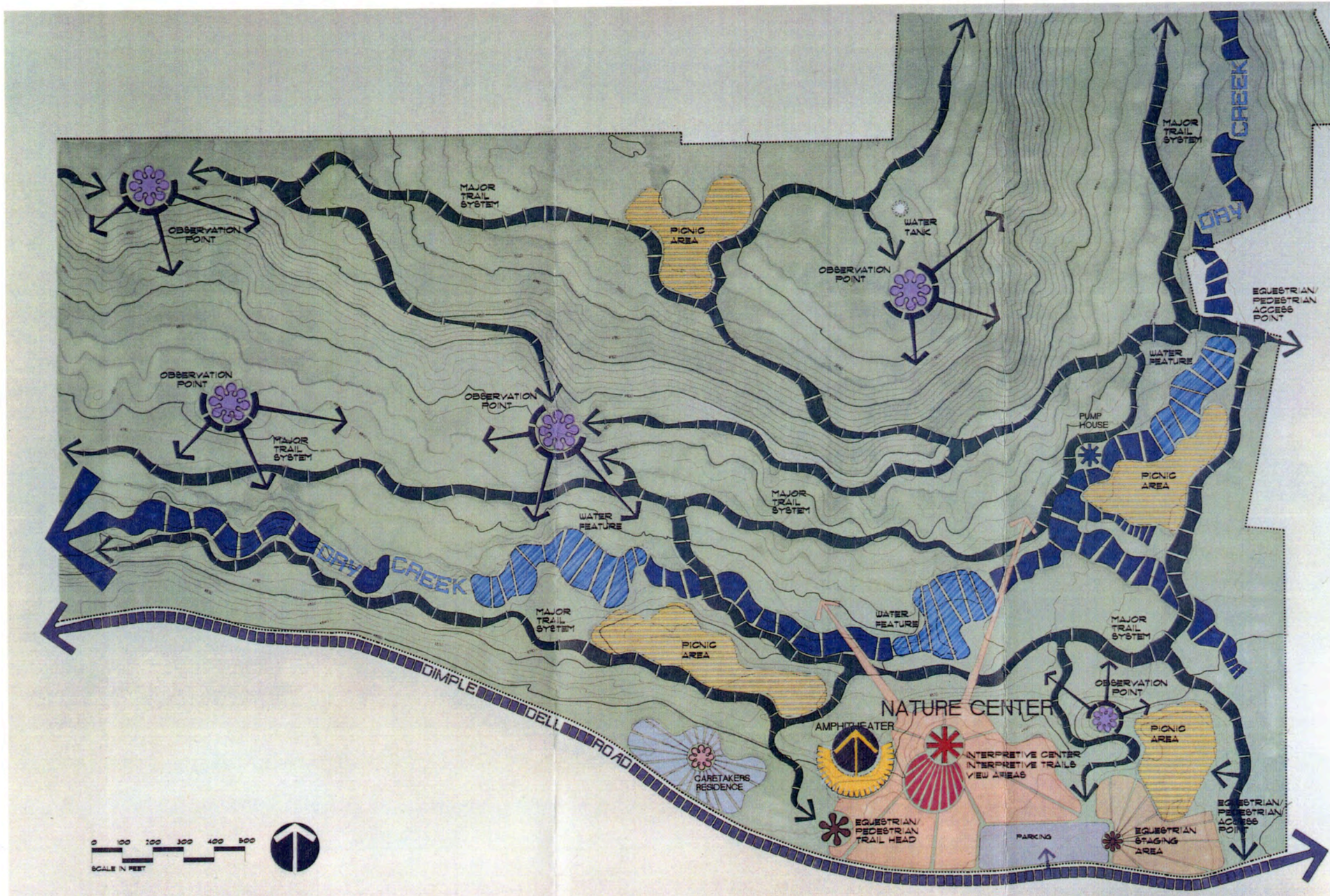


DESIGN CONCEPT 3

Dimple Dell Regional Park

Sandy, Utah

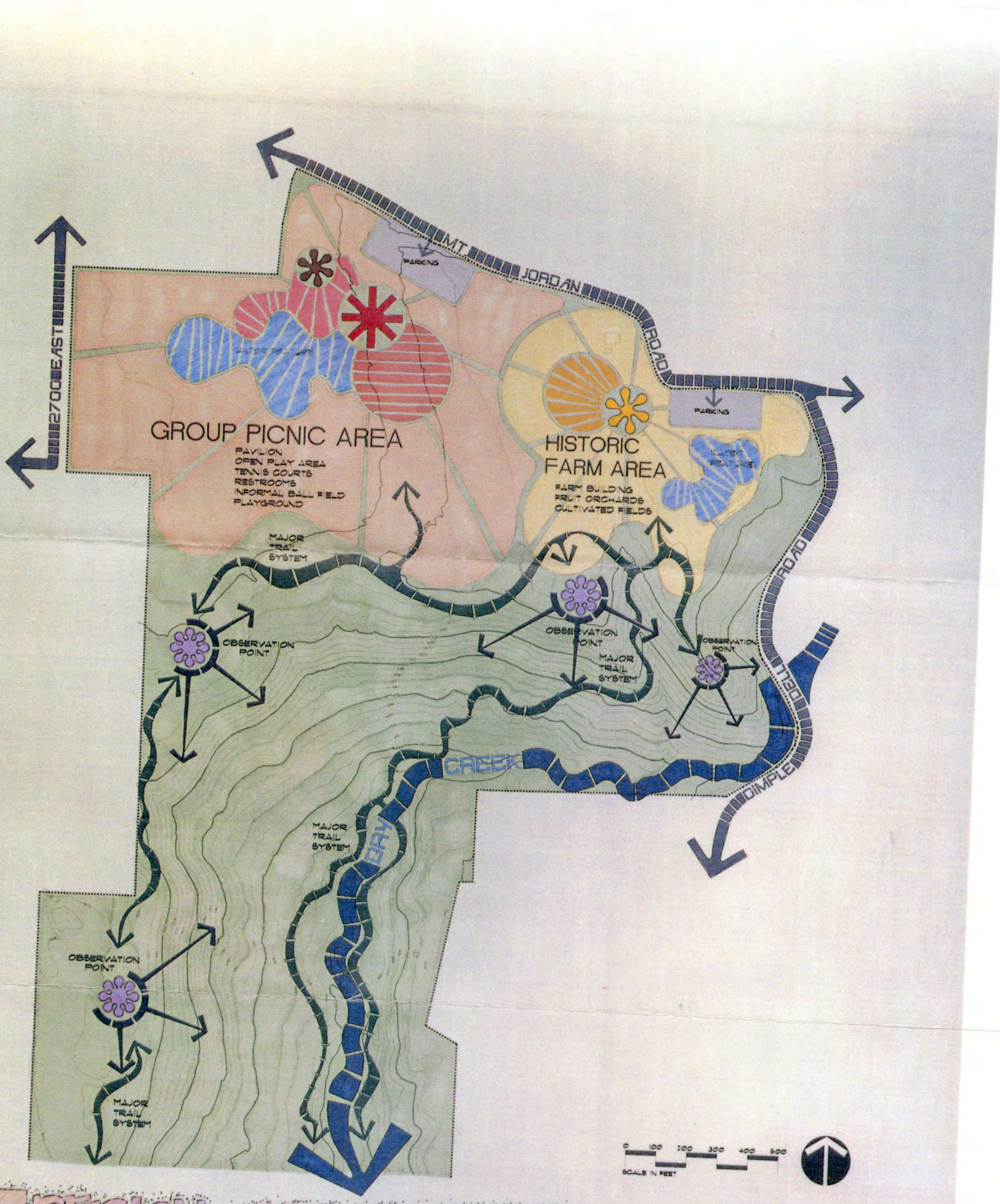
PARKS & REC
Salt Lake County Parks & Recreation



DESIGN CONCEPT 2

Dimple Dell Regional Park
Sandy, Utah

Salt Lake County Parks & Recreation



DESIGN CONCEPT 1

Dimple Dell Regional Park
Sandy, Utah

PARKS & REC
Salt Lake County Parks & Recreation

7.01. Overview of Design Concept

A concept design for the development of Dimple Dell Regional Park has been completed by Salt Lake County Parks and Recreation. The plan has also been approved by the Planning Commission and additional design development will be reviewed and approved on a site by site basis.

Because the Dry Creek corridor is a sensitive environment that responds negatively to high use activities and site disturbances, park uses will need to be developed by strict developmental guidelines.

The park has been broken into seven areas. Each mapped area provides information about the parks existing conditions and proposed uses to be developed on the site.

The proposed park uses identified on the concept design maps, provide park users with the opportunity to experience and learn about Dry Creeks environment. Providing the opportunity to recreate in a natural open space is also an objective of the concept plan.

Connecting major Salt Lake County and community trail systems to the Dimple Dell trail system is a very important function of the park. The length of the park provides a natural linkage for trail systems running east and west between the Jordan River Parkway and the Bonniville Shoreline Bench.

While facilitating the interpretation of the parks natural ecosystems, the parks design concept strives to maintain the integrity of the environment by minimizing user impacts.

A preview of the design concept for Dimple Dell Regional Park follows on the next seven maps.

7.02. Development Program for Dimple Dell Regional Park.

The design concept for the park provides a variety of uses and activities for park users. The following outline describes the specific uses which are planned for Dimple Dell Park.

Design Concept Sheet One
(West boundary, Union Pacific Railway at approximately 250 East)

- Trail connection improvements to Jordan River Parkway.
- Ball diamond complex with parking area
- Rest room facilities
- Open space play area
- Equestrian staging area with parking
- Major trails
- Picnicking area
- Nature interpretive area
- Observation points
- Designated trail systems with access points for: equestrian, hiking, cycling users
- Service / emergency access

Design Concept Sheet Two
(700 East to approximately 1000 East)

- Picnic area / designated access points
- Designated trail systems with major access points for: equestrian, hiking, cycling
- Nature interpretive area
- Observation points
- Service / emergency access
- Major trails

Design Concept Sheet Three
(Approximately 1000 East to 1300 East)

- Designated equestrian staging area w/parking
- Major trails
- Designated trail systems with access points for: equestrian, hiking, cycling
- Observation points
- Picnic areas w/designated trail access

Design Concept Sheet Four
(1300 East to Approximately 1850 East)

- Flanders Point - Nature interpretation area
- Designated trail systems with access points for: equestrian, hiking, cycling
- Observation points
- Picnic areas w/designated trail access
- Historic trail
- Trail head
- Major trails

Design Concept Sheet Five
(Approximately 1850 East to Approximately 2270 East)

- Observation points
- Major trails
- Trail heads for equestrian, hiking and cyclist users. (on north and south boundaries of park)

Design Concept Sheet Six
(Approximately 2270 East, around the curve of Dimple Dell Road to approximately 10350 South)

- Nature Center
  - Amphitheater
  - Programs
  - Interpretation center
  - Interpretation trails
  - Viewing areas
  - Parking
  - Utilities
  - Classrooms
  - Restrooms
  - Kitchen
- Major trails
- Group picnic area
  - Pavilion
- Caretakers residence & support facilities
- Designated equestrian staging area w/parking
- Water development
  - Developed well site / pump house
  - Aqueduct lateral for water supply
- Parking

Design Concept Sheet Seven
(Approximately 10350 South to the North boundary of park at Mount Jordan Road)

- Designated trail systems with access points: equestrian, hiking, cycling
- Observation points
- Major trails
- Group picnic area
  - Pavilion
- Informal ball fields
- Parking
- Open space play area
- Rest rooms
- Historic farm preservation
  - Farm building
  - Fruit orchard
  - Cultivated fields
- Water feature
- Parking
- Water development
  - Bell Canyon water storage and distribution

7.03. General Critique

■ The Dimple Dell Park Design Concept emphasizes the "Nature Experience" rather than the "Active Sports" park experience.

■ An improved trail system will play an important role in providing interpretive experiences. Visitors will be able to recreate in the park and create less of an impact to the environment. Trail heads and access points will be developed to support higher use.

■ The nature center will provide nature interpretation and other related activities for school children and adult education classes. It will also provide educational and entertainment opportunities for the general public.

■ Group picnicking areas will enable neighborhood and community groups to recreate in a natural outdoor environment.

■ Water features will add a new dimension to the park by bringing additional waterfowl and aquatic life to the park.

■ A functional historic farm site will enhance the visit to the park by allowing the visitor an opportunity to see and understand some of the early Utah heritage.

7.04. Specific Critique

The design concept plan for the park was produced prior to the completion of the intensive resource inventory and site sensitivity studies. Following the completion of the these two studies, the design concept was evaluated to see if the proposed park uses were compatible (causing minimal site disturbances) with sensitive site environments in the park

It was determined that most activity areas and park uses do not cause excessive site disturbances. However, some trails that are identified on the design concept plan will require relocation or strict adherence to the developmental guidelines and treatment alternatives in order to safe guard the environment.

The following outline summarizes the comparison of the Design Concept with the Resource Sensitivity Maps.

Sheets 1 - 7

- There are several proposed trails identified on the design concept maps that are aligned on sandy slopes which will be prone to erosion. These trails need to be relocated or constructed according to the trail development details and specifications to prevent additional erosion problems and site disturbances.

Sheet 1.

- Utilizing the abandon landfill for active recreation is a desirable use for this site. No existing native vegetation exists on the landfill that needs to be preserved or would add to the natural theme of the park. Therefore creating a high use, high activity is appropriate for this area.

Sheet 1 (Cont.)

- A secondary nature interpretive area is located in this westerly section of the park that will provide interpretation of various flora and fauna.

- There are both negative and positive impacts of having the railroad right-of-way located close to the landfill area.. The negative impact includes safety and noise. Proposed activities and uses at the landfill will need to incorporate adequate screening and buffering to reduce impacts to the park. The safety aspect must be addressed in order to provide a park that is comfortable and secure for park users.

Sheet 2

- A picnic area on the east side of the 700 East road crossing takes advantage of a mature stand of trees. Access to the area will require additional trail construction.

- The 700 East road crossing creates a negative impact to the site. It inhibits continuous access through the site and creates undesirable views and noise. It also restricts wildlife migration patterns, which causes road kill of animals and dangers to vehicle traffic.

- Activities in the park which occur adjacent to roadways must be designed to provide maximum safety for park users. Safe road crossings for equestrians and pedestrians needs to be established by constructing a new tunnel or a marked surface on the roadway.

Sheet 3

- Group and neighborhood picnic facilities utilize flat areas on north facing slopes which are easily accessible and are well suited for this activity.

Sheets 3 & 4

- Continued use and improvement of the Wrangler Trail Head causes some negative impacts to the site. There are some steep slopes adjacent to the trail head that need to be protected. Expansion of the trail head must be developed in suitable areas of the site.

- The 1300 East road crossing causes similar impacts to the park as those identified at the 700 East road crossing. Because of larger traffic volumes and a wider right of way, the negative impacts to the park are more visible. Revegetating the roadway slopes with native shrubs will lessen the visual impact of this intrusion.

Sheet 4

- Utilizing Flanders Point as a nature interpretive area is very a compatible use for this site. Flanders point provides vistas of the park and is part of the Lake Bonneville bench type habitat. Access to the Flanders Point is easily available for both pedestrians and vehicles.

Sheet 5

- Observation points are located on landforms that function well for viewing. However caution must be taken to provide for stabilization of the landform where erosion potential is identified.

- Park activities located near park boundaries and adjacent to roads must provide for the safety and security of the park users..

Sheet 6

- The proposed site for the Nature Center is located in the southeast corner of this section of the park. The nature center facility and related activities utilizes the natural land structure. The Nature Center site takes advantage of distant views north and west into the park. Siting the amphitheater in a natural bowl will enhance the character of the site. Close proximity to Dimple Dell Road will help prevent excessive site disturbances.

- The development of natural water features such as still-areas and oxbows are propos-

ed for this area of the park. The function of these natural water features will be to enhance the existing riparian vegetation and create habitat for wildlife. These water features will add to the natural character of the Dry Creek corridor and increase the variety of habitats to enjoy, study, and observe.

Sheet 7

- In the northeast portion of the park, a group picnic area and related recreation activities are identified as proposed uses. The flat topography and existing vegetation in this area is well suited for this type of activity. This activity area is also located near two access roads.

- Preservation of a historic farm is proposed at the east end of the park. Preserving the remaining home site and the foundations of other historic farm structures, will provide park visitors with a viewpoint of early Utah settlements.

7.05. Development Outside Dimple Dell Regional Park

In addition to the development of proposed park uses inside Dimple Dell Park, attention must also be given to the development of off-site activities. Activities that need to be considered as development occurs in Dimple Dell Park and surrounding areas are:

- Access routes to the Jordan River Parkway

- Access routes to the Wasatch Forest
  - Lake Bonneville Shoreline Trail
  - South Fork Trail Head
  - Little Willow Trail Head
  - Big Willow Trail Head

- Access routes to the Historic Granite Community

These access routes must provide access to and from Dimple Dell Park for pedestrians, equestrians, bicyclists, and cross country skiers. In addition to providing human access, these routes must also preserve migration paths for wildlife.

7.06. Function of Park Development Plan Critique

The proper sequence for developing a design concept for Dimple Dell Park should have involved the completion of a comprehensive resource and site sensitivity study before designing the proposed park activities and uses.

Since the design concept was completed prior to any site analysis studies, it was necessary to overlay the design concept with the site sensitivity maps to make site impact evaluations.

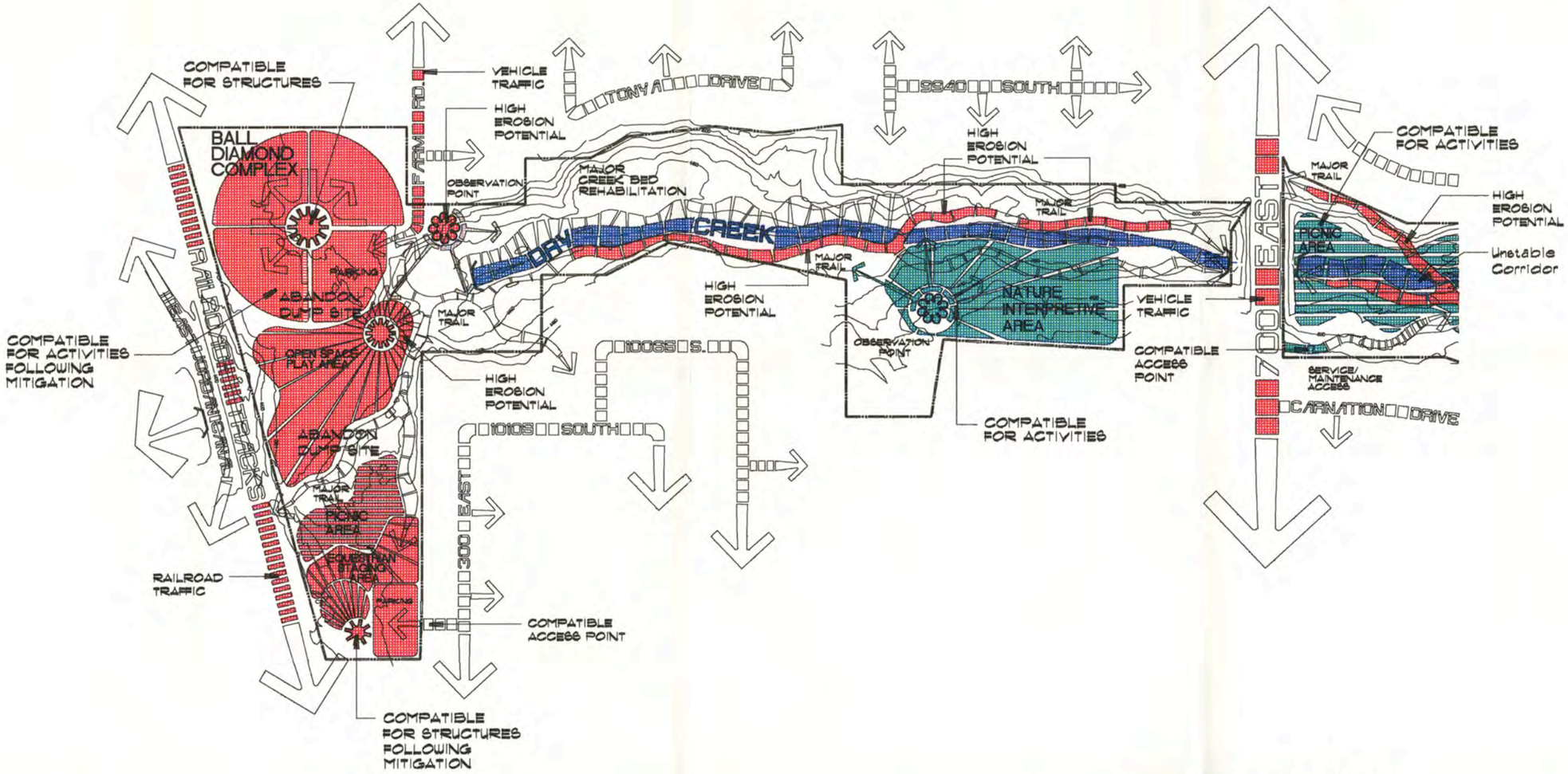
Where proposed land uses negatively impact specific sites, the land use is highlighted in red. To lessen the impact that the land use will have on the site, either relocate the land use to an appropriate site or follow mitigation/development procedures which will allow the land use to function on the site.

Where proposed land uses do not negatively impact specific sites excessively, the land use is highlighted in green. This indicates that the land use and level of activity is highly compatible with the site and surrounding environment.

Where proposed land uses do not negatively impact specific sites, but function without requiring any mitigation/development treatments, the land use is not highlighted with a color.

The park development plan maps are not to be used as site sensitivity maps. They are simply an evaluation of how the design concept works with the site.

For site sensitivity information, see section 4, Site Sensitivity.



Park Development Plan

Dimple Dell Regional Park

SCALE IN FEET

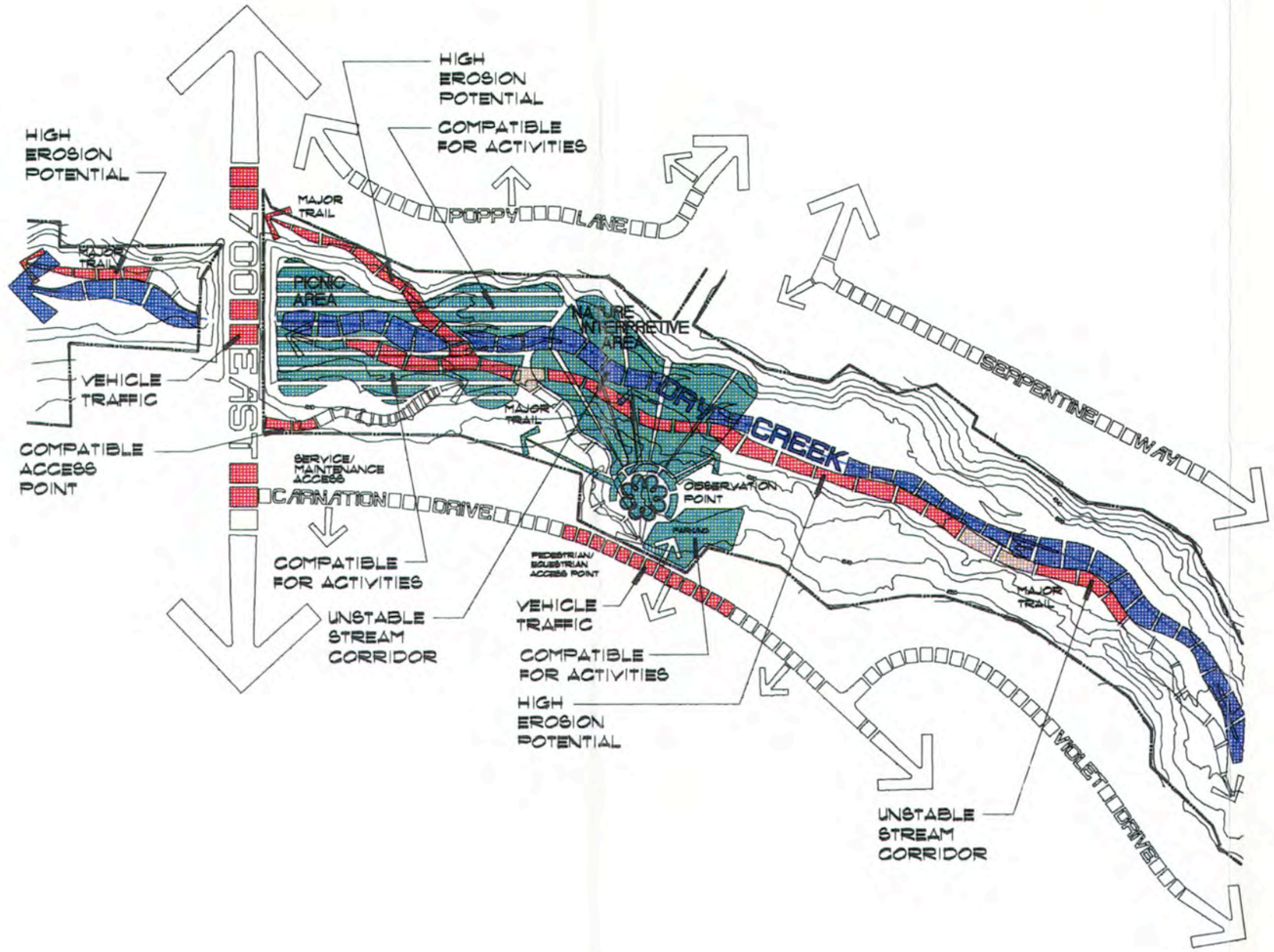
Proposed Land Use is Highly Compatible With Site

Proposed Land Use is Compatible With Site

Proposed Land Use Requires Site Mitigation

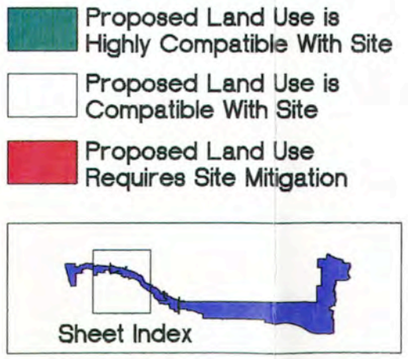
Sheet Index

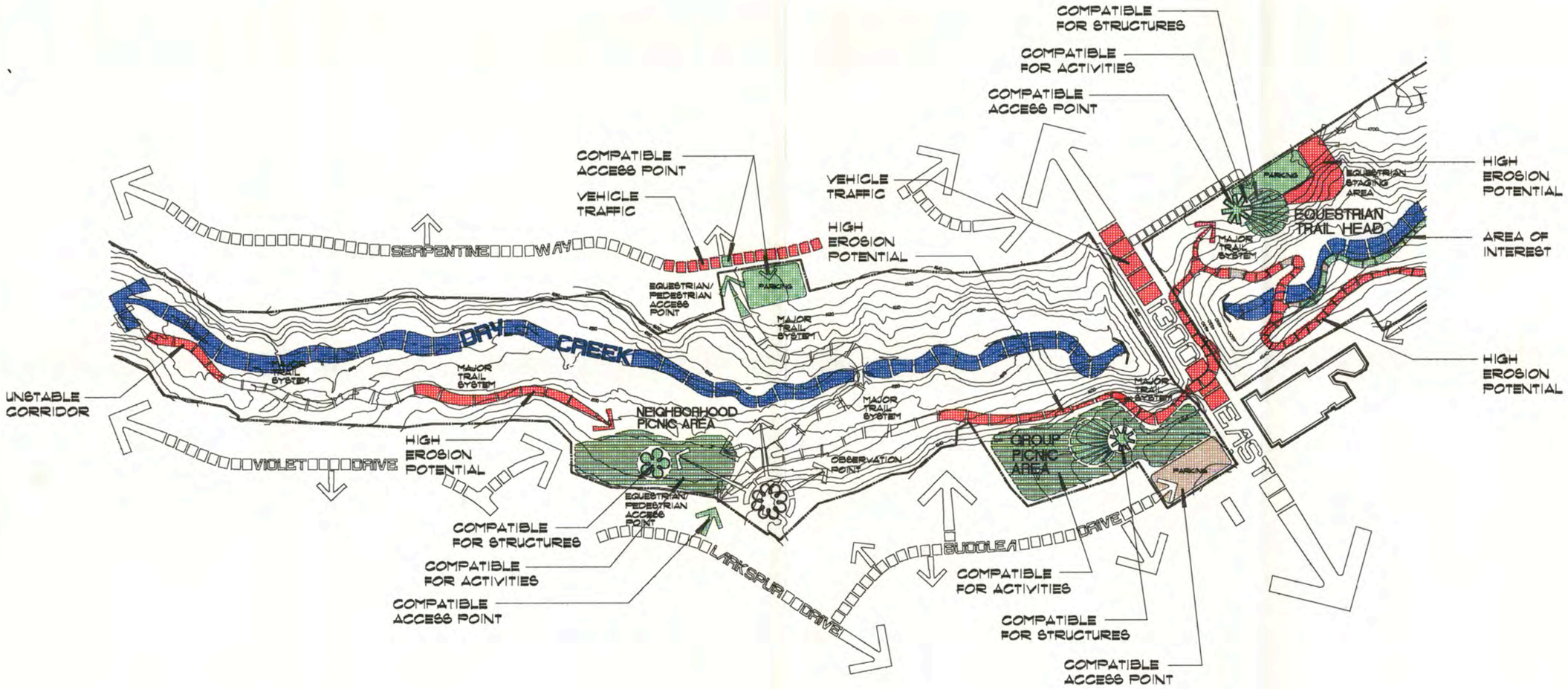
Map 7.06



Park Development Plan

Dimple Dell Regional Park





Park Development Plan

Dimple Dell Regional Park

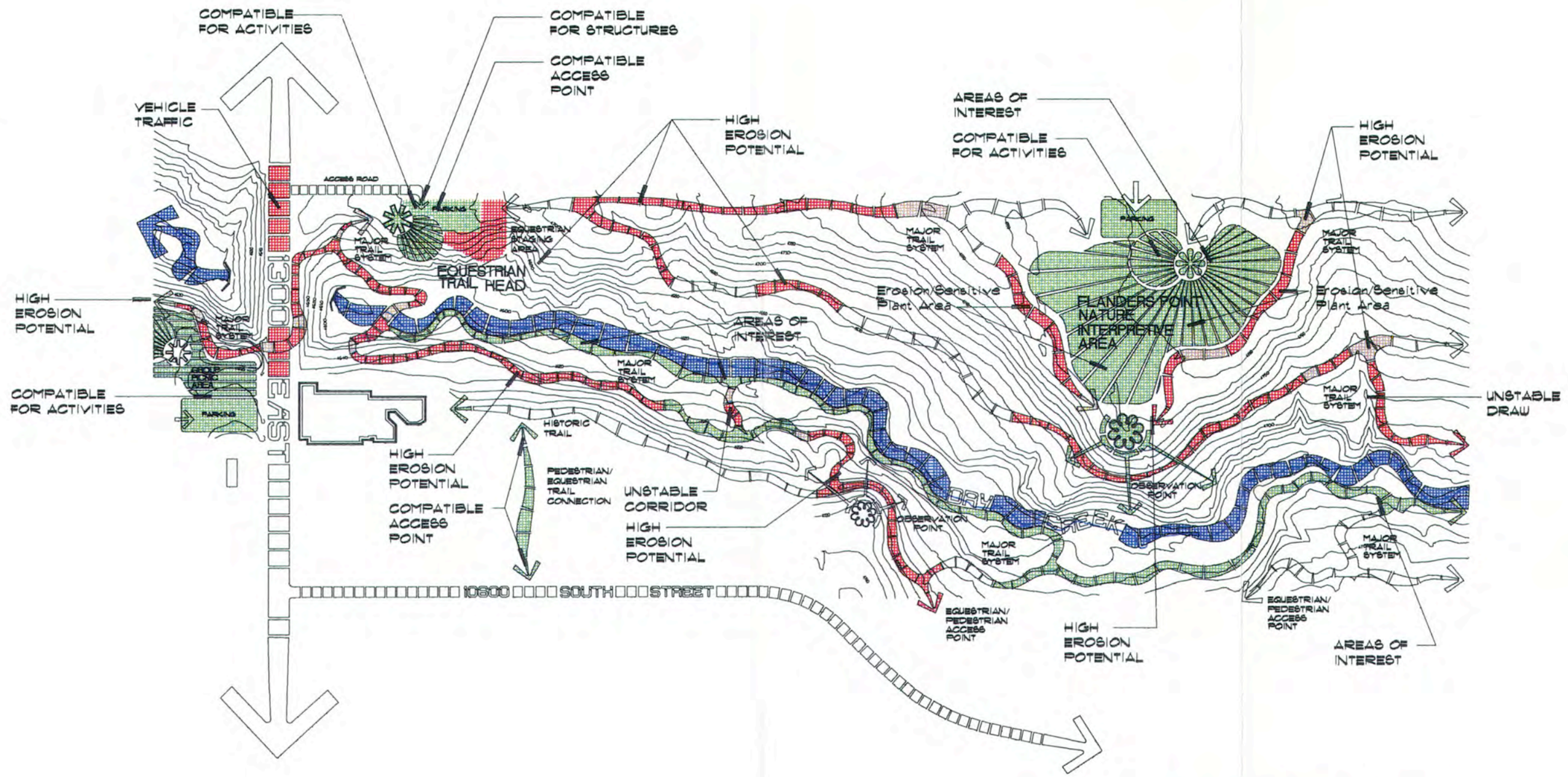
Proposed Land Use is Highly Compatible With Site

Proposed Land Use is Compatible With Site

Proposed Land Use Requires Site Mitigation

Sheet Index

Map 7.06.3



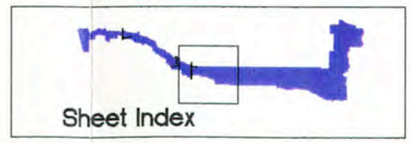
Park Development Plan

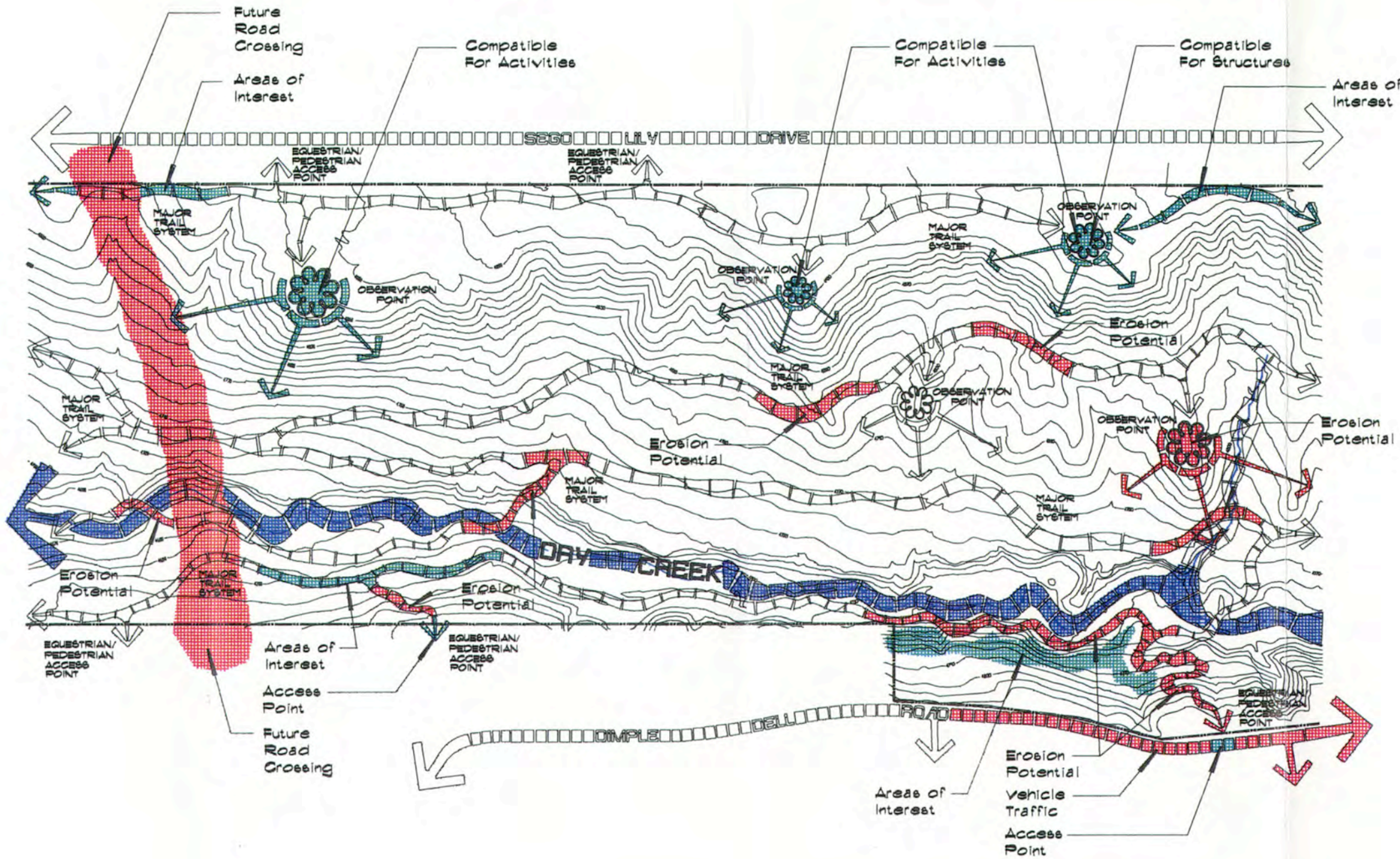
Dimple Dell Regional Park

Proposed Land Use is Highly Compatible With Site

Proposed Land Use is Compatible With Site

Proposed Land Use Requires Site Mitigation





Park Development Plan

Dimple Dell Regional Park

Proposed Land Use is Highly Compatible With Site

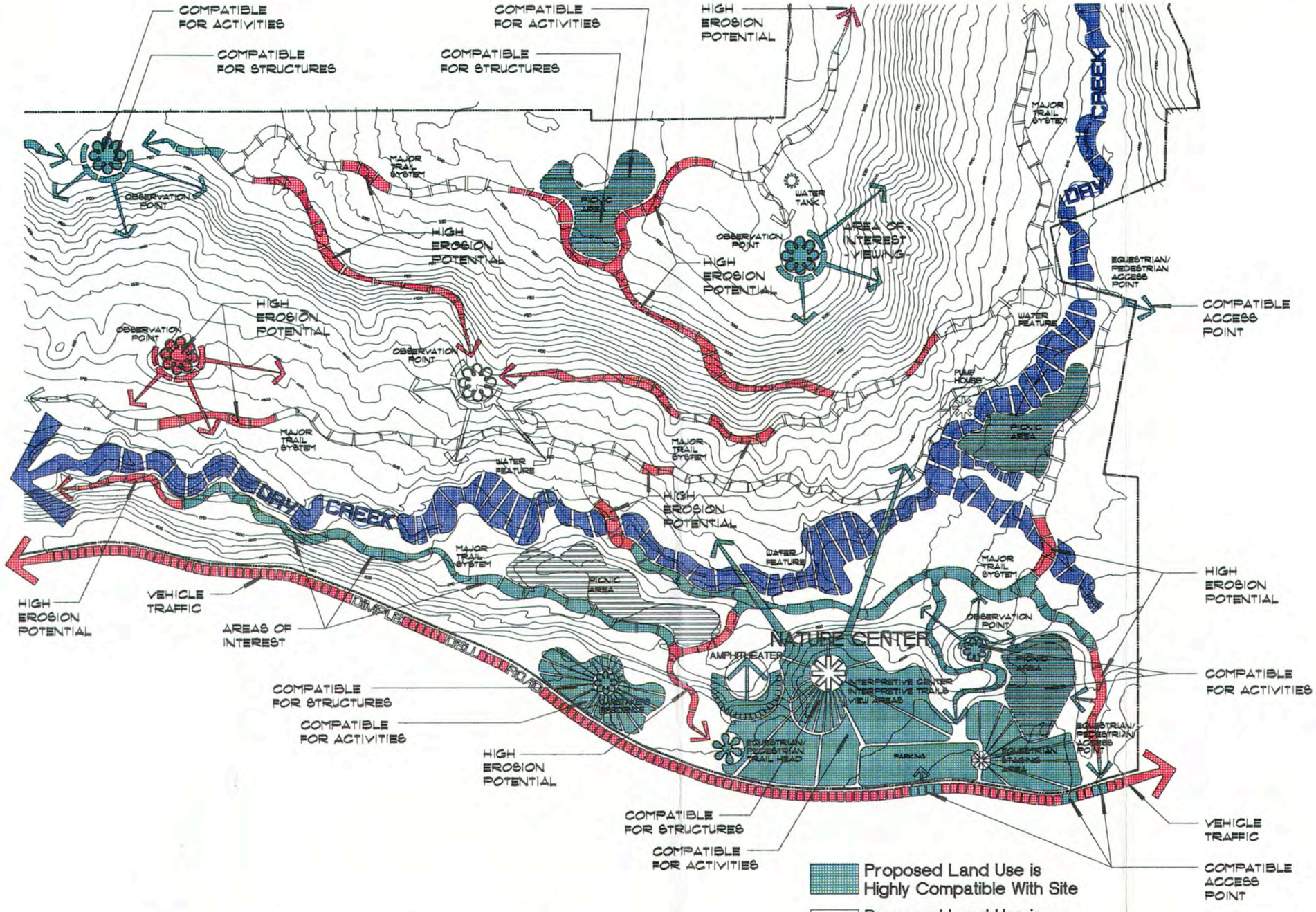
Proposed Land Use is Compatible With Site

Proposed Land Use Requires Site Mitigation

Sheet Index

SCALE IN FEET

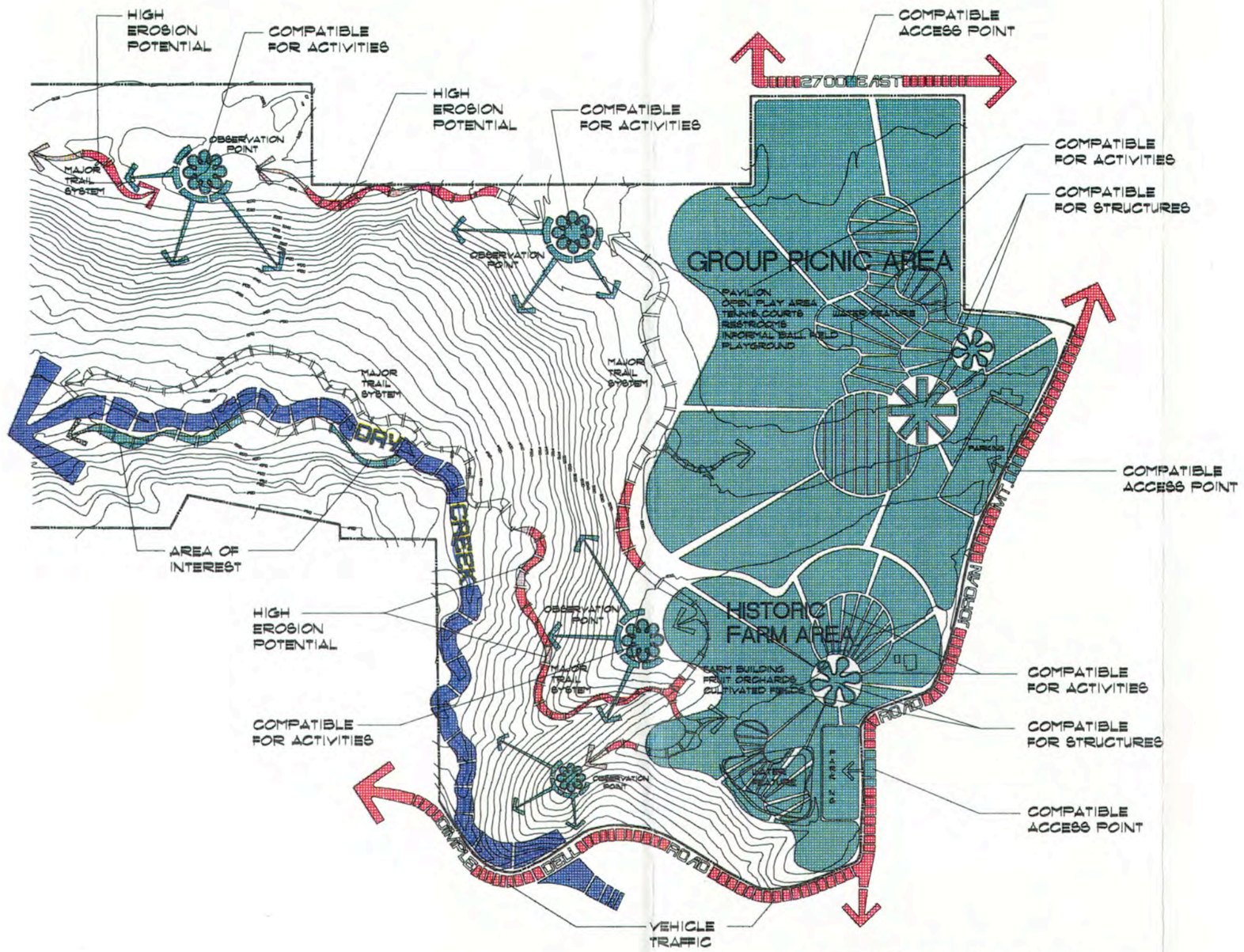
Map 7.06.5



Park Development Plan

Dimple Dell Regional Park

Map 7.06.6



Park Development Plan

Dimple Dell Regional Park

Proposed Land Use is Highly Compatible With Site

Proposed Land Use is Compatible With Site

Proposed Land Use Requires Site Mitigation

Legend of Units

AC	Acre
CY	Cubic Yards
EA	Each
HR	Hour
LB	Pound
LF	Linear Foot
LS	Lump Sum
MSF	Thousand Square Feet
SF	Square Foot
SY	Square Yard

8.01 TRAIL MITIGATION ALTERNATIVES

Figure #	Description	Unit	Labor	Materials	Summary
A-1	EMBEDDED STUMPS stream grading, trail grading, stumps (6 min.), 14"-16" dia. by 30" long	LS	230.00	280.00	510.00
A-2	SPLIT LOG BRIDGE grading, 12'x16" dia. split log, railing, log ties	LS	430.00	350.00	780.00
A-3	DIMENSIONAL LUMBER BRIDGE 5' Wide grading, 12'x 5' bridge, abutment (prefab, treated Wood)	LS	420.00	2250.00	2670.00
A-3	DIMENSIONAL LUMBER BRIDGE 10' Wide grading, 15'x 10' bridge, concrete abutment	LS	1850.00	3700.00	5550.00
A-4	BICYCLE STREAM CROSSING grading, rip-rap, boulders (5 min.)	LS	160.00	150.00	310.00
A-5	EQUESTRIAN STREAM CROSSING grading, logs, rip-rap	LS	160.00	200.00	360.00
A-7	TRAIL CLEARING/GRADING (Hand Labor) three man crew: 1) foreman, 2) laborers pruning, clearing, grading	HR	55.00	-	55.00

Figure #	Description	Unit	Labor	Materials	Summary
A-8	TIMBER RETAINING WALL 4' Ht earthwork, timbers, bars, spikes	LF	15.00	16.00	31.00
A-8	TIMBER RETAINING WALL 6'Ht earthwork, timbers, bars, spikes	LF	30.00	31.25	61.25
A-8	STONE RETAINING WALL 6'Ht 3' below grade, dry set	LF	27.00	21.00	48.00
A-10	TRAIL SURFACING				
	Wood Chip (2" Depth)	SF	-	-	varies
	Crushed Stone (2" Depth)	SF	.20	.25	.45
	Asphalt (2" Asphalt on 4" Base)	SF	.60	.45	1.05
	Asphalt (3" Asphalt on 6" Base)	SF	.70	.65	1.35
A-11	TRAIL EDGING				
	Metal Edge	LF	1.60	2.60	4.20
	Treated Timber Edge (2"x4")	LF	1.60	.50	2.10
	Stone	LF	2.20	.40	2.60
	Treated Timbers	LF	1.60	1.00	2.60
A-12	POROUS PAVING				
	Precast Concrete Units	SF	2.50	1.20	3.70
	GeoBlock Units	SF	3.70	2.70	6.40
A-13	LOG WATER BAR grading, log	LS	-	-	50.00
A-14	STEPS (5' Tread)				
	Stone	EA	18.00	5.00	23.00
	Log	EA	15.00	7.00	22.00
	Treated Timber	EA	15.00	9.00	24.00

8.02 EROSION MITIGATION ALTERNATIVES

B-1	STAIR STEPPING	LF/Str	1.50	-	1.50
B-2	STRAW BALE DIKE	LF	2.50	17.00	19.50
B-3	SURFACE ROUGHING	MSF	20.00	-	20.00
B-4	SILT FENCE	LF	8.00	1.60	9.60
B-6	EROSION CONTROL BLANKET	MSF	34.50	51.00	85.50
B-8	GEOMATRIX GRID SYSTEM	MSF	-	-	2100.00
B-9- B-10	MULCHING 3 man crew: 1) foreman, 2) laborers				
	Bark Chunks	MSF	55.00	varies	varies

Figure #	Description	Unit	Labor	Materials	Summary
	Bark Shreds	MSF	55.00	varies	varies
	Compost	MSF	55.00	varies	varies
	Grass Clippings	MSF	55.00	varies	varies
	Leaves	MSF	55.00	varies	varies
	Straw	MSF	55.00	varies	varies
	Peat, Mountain	MSF	55.00	varies	varies
	Peat, Sphagnum	MSF	55.00	varies	varies
	Wood Chips	MSF	55.00	varies	varies
	Wood Fibers	MSF	55.00	varies	varies
	Wood Shavings	MSF	55.00	varies	varies

8.03 STREAM MITIGATION ALTERNATIVES

B-2	STRAW BALE DIKE	LF	2.50	17.00	19.50
C-2	STORM DRAINAGE OUTLET				
	Baffle Wall Basin 18" Culvert EA	250.00	1100.00	3600.00	
	Straight Drop Spillway 18" Culvert	EA	2400.00	800.00	2200.00
	T-Fitting 15" Culvert	EA	100.00	50.00	150.00
	Energy Dissipator Drum 15" Culvert	EA	250.00	150.00	400.00
C-3	RIP-RAP grading, geotech fabric, bedding, rip-rap material	CY	15.80	10.20	26.00
C-4	GEOMATRIX GRID SYSTEM grading, geomatrix material, fill, seed, mulch	MSF	-	-	2100.00
C-4	CHANNEL LINER grading, channel liner, staples	MSF	34.50	51.00	85.50

8.04 VEGETATION MITIGATION ALTERNATIVES

D-1	NATIVE SEED from park site, hand collected	LB	40.00	-	40.00
D-1	NATIVE SEED from commercial seed grower	LB	5.00	-	5.00
D-3	UNDESIRABLE VEGETATION TREATMENT				
	Spraying	MSF	6.70	12.00	18.70
	Physical Removal	MSF	23.00	-	23.00
	Mowing	MSF	23.00	-	23.00
	Weed Whip	MSF	25.00	-	25.00
D-4 - D-6	SEEDING seed bed preparation, broadcasting seed, mulching	MSF	21.00	15.00	36.00

Figure #	Description	Unit	Labor	Materials	Summary
	SEEDLING PLANTING planting native plant seedlings	EA	1.00	.80	1.80

8.05 LANDFILL CLOSURE AND COVERAGE

E-1	CLOSURE AND COVERAGE topsoil 6", hydroseed revegetation	AC	-	-	14,300

8.06 PARK DEVELOPMENT

F-1	FENCING				
	Log Fence (6" dia. post, 3-3" dia. rails)	LF	2.80	5.50	8.30
	3 Rail Fence (4x4 Post, 2x4 rails)	LF	2.80	7.30	11.10
	Woven Field Fence (6' Ht)	LF	3.20	8.50	11.70
F-2	INFORMATION KIOSK	LS	-	-	400.00
F-3	NEIGHBORHOOD PICNIC SHELTER Salt Lake County standard 24'x24'	LS	-	-	53,000.00
F-3	GROUP PICNIC PAVILION Salt Lake County standard 60'x64'	LS	-	-	100,000.00
F-4	REMOTE PICNIC TABLE	LS	-	-	350.00
F-5	PARK SIGNAGE				
	Type A	LS	-	-	600.00
	Type B	LS	-	-	400.00
	Type C	LS	-	-	300.00
	Type D	LS	-	-	200.00
F-6	TRAIL STAGING AREA				
	Signage	LS	-	-	600.00
	Paving, Gravel	SY	.50	2.10	2.60
	10' Bicycle Rack	EA	-	-	300.00
	Restroom (4 Fixture)	LS	-	-	32,000.00
	Drinking Fountain	EA	-	-	4500.00
	Water Trough	EA	-	-	1200.00
	Hitching Rail	EA	-	-	300.00
F-8	OBSERVATION STRUCTURES				
	Observation Deck	SF	5.50	3.00	8.50
	Wildlife Blinds (Concrete Enclosure)	LS	-	-	3000.00
	Observation Bench	EA	150.00	200.00	350.00
F-9	RESTROOM FACILITY (12 Fixture)	LS	-	-	61,500.00
F-10	ROADS				
	Crushed Stone	SY	4.50	18.90	23.40

Figure #	Description	Unit	Labor	Materials	Summary
	Porous Paving	SY	22.50	10.80	33.30
	Asphalt	SY	7.20	16.50	23.70
	Wood Chips	SY	-	-	varies
F-11	TRAIL SIGN POST	LS	-	-	50.00
	DESIGNATED TRAIL ACCESS				
F-13	Structure A	LS	-	-	1000.00
F-14	Structure B	LS	-	-	1200.00

9.01. HISTORY OF PARK ADMINISTRATION AND MASTER PLANNING

In 1960, a Comprehensive Master Plan for development of Open Space in the Salt Lake Valley was published. That Master Plan stated "Every Community should have a large park area which offers the people an opportunity to enjoy natural beauty... including any outstanding scenic areas in the locality, such as stream valleys or features of historic or archeological importance. Parks... should be conveniently located in every metropolitan area...and should offer an opportunity to enjoy unspoiled natural beauty...among the recreational activities for which provisions should be made are hiking, picnicking, swimming, camping, fishing, boating, horseback riding and nature study."

In response to this recommendation, in the ten years from 1963 through 1972, fourteen parcels of land were acquired by Salt Lake County totaling 643.83 acres, at a cost of $1,892,747.00. A large portion of these funds were acquired from the Federal Government, specifically from conservation grants. This acquisition of property by Salt Lake County represented the origin of Dimple Dell Regional Park, primarily to provide for preservation of open space needs, provide recreation opportunities and function as a nature preserve.

As background for the implementation of this management plan, lets review the progression of development which has taken place in the formation of Dimple Dell Regional Park.

In 1960, the first comprehensive master plan for the development of Salt Lake County, identified and defined the problem and desirability of providing adequate park areas in Salt Lake Valley devoted to preservation of natural beauty and scenic features of the land as well as providing for some natural recreation facilities.

In 1965, after five years of planning and consideration, guided by the deliberations and recommendations of a Citizen's Council of 117 Salt Lake Valley residents, the Salt Lake County Planning Commission approved, adopted, and published the "The Master Plan For The Development of Salt Lake Valley", to be utilized as the guideline for Salt Lake County's development program and activities between 1965 and 1985. Included in this Master Plan were specific references to the importance of Dimple Dell Regional Park.

One of the 11 specific major goals and policies identified in the Master Plan was the development of parks and recreational facilities throughout the Salt Lake Valley:

"High standards for parks and recreation should be established throughout the Valley and attention given to:
- use of land on both sides of the Jordan River for park purposes.
- acquisition of vacant lands for parks in advance of development.
- protection of natural beauty of canyon areas."

A comprehensive system of regional parks and local recreation areas is proposed in the plan to meet the recreation needs of the growing population. Regional parks will serve the entire Valley and provide facilities for picnicking, hiking, horseback riding, boating and swimming.

The development of Dimple Dell Regional Park was further detailed in the specific master plan recommendations for two of the seven districts comprising Salt Lake Valley, namely the Little Cottonwood District and the Draper District, as follows:

"The Jordan River, Little Cottonwood Dry Wash and parts of Little Cottonwood Creek are proposed in the master plan as park sites. Little Cottonwood Dry Wash is proposed for picnicking, hiking, camping, game fields, horseback riding, archery, and tennis."

The prominence of Dimple Dell Regional Park as a major, unique, natural, outdoor recreational facility was an element in the accepted Master Plan for Development of Salt Lake Valley, targeted for implementation between 1965 and

1985. Facilities and recreational activities specifically identified for Dimple Dell Park by the master plan were:

1) Outdoor natural recreation activities
2) Protection of natural beauty (geography, flora, fauna) of the park site
3) Equestrian uses and trails
4) hiking
5) Picnicking

References to possible future uses were:
1) field games
2) archery
3) tennis
4) limited overnight camping

In 1976, as a continuation and update of the 1965 Master Plan for Salt Lake Valley, the Salt Lake Planning Commission, with the help of a planning consultant, prepared an updated and specific development plan for the Little Cottonwood Planning District. This document strongly recommended development of Dry Creek (Dimple Dell) Regional Park as a natural, open space, equestrian, hiking and floodway control facility. Several specific recommendations in this master plan emphasized the importance and high priority for development in Dimple Dell Regional Park. Some of the recommendations are as follows:

1) "The natural, aesthetic, and recreational values of the creeks which flow through the Little Cottonwood Planning District should be protected from destruction and encroachment by urban development. The jurisdiction within the Planning District should seek opportunities for creating a continuous system of creeks and greenways, which link local and regional parks."

2) "Floodways are designated along the three creeks which flow though the district: Little Cottonwood Creek, Dry Creek and Willow Creek."

3) "Recreational uses should be incorporated into the design and development of future water supply, drainage, and flood control projects. Special consideration should be given to the construction of large scale, safe, and attractively designed storm water retention ponds which can function for a large proportion of the year as recreation facilities or open space."

4) "The expansion and development of regional recreation facilities, which serve the Planning District and the Salt Lake metropolitan area, should be supported by the citizens of Sandy, Midvale, and Salt Lake County. Regional recreational facilities should be developed along the Jordan River and should be linked with Dimple Dell Regional Park."

5) "Recreational trails for equestrian, hikers, and bicyclist should be developed, where appropriate, in regional park facilities and in other open spaces, such as flood plain areas or right-of-ways and along creeks."

6) "Points of equestrian access are located in proximity to Dimple Dell Regional Park. In the approval of subdivisions or other major developments in this area, Salt Lake County and Sandy City should require permanent access to be provided for equestrians into the park and assure effective design of facilities.

7) "When considered with the floodways and other open space areas...the implementation of parks and open spaces would fill the objective of providing recreation facilities in locations readily accessible to area residents as well as providing a continuous and linked system of greenways along water courses..."

Summary of 1976 Master Plan:

The park should be primarily a natural, open space, equestrian, hiking, floodway control facility.

The park should become a major link to local recreational facilities and to the Jordan River.

Storm water retention ponds should be provided within the park.

Neighborhood recreational facilities should be provided by this park for high population areas where there is a lack of elementary schools with park-like facilities.

High priority facilities for this park include trails for equestrians, hikers, bicyclists and should include appropriate points of access for these activities to the park.

In 1977, the Salt Lake Planning Commission with the help of a national planning consultant, prepared and published a Master Plan Land Use Element for Slat Lake County as an up-date and implementation tool for the original 1965 Salt Lake Valley Master Plan. Some of the recommendations are as follows:

1) "Cross country recreation access in the south county between the Wasatch and Oquirrh Mountains is encouraged by pedestrian, bicycle, and equestrian parkways along Dry Creek and Butterfield Creek."

2) "The Wasatch Mountains and Canyons provide the principal focus for regional recreation in Salt Lake County. However:

   • there is a demand for additional camping, picnicking and cabin development in the Canyons,

   • there is a demand for additional winter and year-round resort development,

   • there is a desire to preserve and protect natural areas in the Canyons for pursuits such as hiking and climbing; the combined demand for formal and informal use of the Wasatch front Canyons threatens some areas with overuse or development inappropriate to natural areas.

Together with the Wasatch front Canyons, the Great Salt Lake and Jordan Valley offer the opportunity for a unique and diverse system of major parks and recreation areas to serve the developing metropolitan area.

The Master Plan recommendations concentrated efforts to provide regional recreation alternatives to the Wasatch front Canyons which should be principally used for those activities for which the area is intrinsically suitable. By directing more intensive use and activities to less vulnerable and unique areas, recreation needs can be distributed throughout the Valley."

Summary of 1977 Master Plan:

The regional recreational resources of the Wasatch Mountains and Canyons should be augmented and balanced by development of recreation areas along the Jordan River, around the Great Salt Lake, and in the canyons on the South and West sides of the Valley.

To the maximum extent possible, components of the regional and local park systems should be linked by right-of-ways or easements to provide a network of greenways for hiking, biking and horseback riding.

It will be significantly important to protect access both to the east side of the Jordan Parkway and to Dry Creek in Sandy.

Acquisition of land adjacent to Dimple Dell Regional Park and planning for development in the park needs to continue.

Dimple Dell Regional Park is a strategic linkage element for activities and trails connecting the Jordan River Parkway to the Wasatch Mountains.

In 1982, a master plan for Salt Lake County Division of Recreation, Parks, and Multi-Purpose Centers was prepared, updating a previous 1972 master plan. The master plan report consisted primarily of summaries of the recreational facilities and activities developed over the years by Salt Lake County, programs and facilities currently available through the county governments efforts.

Summary of 1982 Master Plan:

Preservation of open space (such as that available in this park) within the county is becoming progressively more critical.

Although development of Dimple Dell Regional Park is considered critical, and although more than 12 million dollars has been spent by Salt Lake County on development of County parks and recreation facilities in the past 15 years, no funds have been expended on development of Dimple Dell Regional Park, primarily because of a

lack of a long-range Master Plan for the park.

Until a Master Plan has been produced and approved, development of Dimple Dell Regional Park appears to be a low priority project for Salt Lake County.

Summary of Five Master Plans:

Dimple Dell Park was acquired and should be developed as a natural, unspoiled, scenic open space, primarily devoted to the preservation of naturally existing geography, flora, and fauna.

Development of Dimple Dell for certain types of natural outdoor recreational uses is permissible, so long as this type of development does not detract from, or interfere with, the primary natural open space preservation function of the park. Such acceptable uses include trails for horseback riding, hiking, non-motorized bicycling, jogging, picnicking and limited camping in selected areas.

An effort should be made to acquire additional land west of the present west end of the park, linking it directly to the proposed Jordan River Parkway.

There is a serious shortage in park facilities in Salt Lake County. This deficiency is increasing steadily as population increases and available undeveloped land decreases. Acquisition and development of parks for natural outdoor recreational activities thus is a high priority, urgent matter for County government consideration and action.

9.02 Conceptual Guidelines of the Citizen's Advisory Board

Important conceptual guidelines for Dimple Dell Regional Park, developed by the Citizen's Advisory Board include:

1) Multi-Use Complex Approach for Development

2) Establishment of Primary and Secondary uses for Dimple Dell Regional Park:

Primary Uses
- A nature preserve
- Natural recreational trails
- Picnicking on scenic sites
- Limited short-term (one-nite) camping in designated site by small group
- Selected equestrian activities
- Historical monuments and/or sites
- Small natural ponds and or stream

Secondary Uses
- Organized sports activities
- Aquatic activities
- Open air concert pavilions
- Cross county skiing
- Bicycling paths

Prohibited Uses
- Hunting and/or firing of any firearms
- No motorized vehicles
- Commercial amusement concessions
- Golf course
- Organized competitive sports facilities

For many years this sanctioned body of citizens has played an important role in helping Salt Lake County establish the direction for development for Dimple Dell Regional Park. Development decisions formulated by the Advisory Board include:

1) Adoption of a park development plan, a utilization Master Plan, a schedule for it's orderly implementation.

2) Establishment of park boundaries and entrances, including fences, signs, access roads and vegetation enhancement.

3) Approval of funding sources and strategies.

4) Activation of a park water system.

5) Identification and signing of a recreational trail system within the park.

6) Implementation of effective litter and erosion control measures.

7) Implementation of effective fire and flood control measures.

8) Organization and mobilization of private,

citizens, philanthropic support and participation in the park development.

9.03. PURPOSE FOR THE MANAGEMENT PLAN

The increasing demand for recreation in Dimple Dell park requires a management plan be established to protect the park. A management plan is a carefully thought out and devised plan for managing park resources. It is also a tool which can be used for making planning decisions.

The Dimple Dell Park Management Plan is a strategic plan for rehabilitation, preservation and development, based on clear and unambiguous objectives. These objectives are outlined in section 1.04. of this document and will be discussed in more detail in this section.

The Management Plan defines what the parks natural resources are and evaluates their condition. Treatment alternatives for severely disturbed sites have been specified to counter-act the silent deterioration of the park.

The ecological condition of the park varies from area to area and from site to site. Variations in site conditions are caused by the amount of disturbing activities that have taken place.

1. Implementation of the Management Plan

Park management is the skillful, responsible control of park resources and activities. To understand how to implement the management plan for Dimple Dell Park, three management categories need to be defined.

Landscape Preservation:

Landscape preservation is the maintenance of the landscape in its most natural, untrammeled condition. This definition suggests either an absence, or strict control of, man and his effect. Management techniques which are implemented shall not detract from the visual or biological quality of the resource. Preservation may be accomplished by zoning, management policy, and management treatments, as well as by proper site development.

Landscape Rehabilitation:

Landscape rehabilitation focuses on reversing or minimizing environmental degradation. The original degradation may be from overgrazing, high visitor impact, utilities or other disturbances. Rehabilitation suggests that measures be taken to re-establish the natural landscape character, as well as to provide habitat for indigenous wildlife and vegetation. Such modifications should reflect the need to rehabilitate the entire ecosystem, rather than providing planting or landforms to screen more complex environmental problems.

Park Development:

The development of any park feature will be a foreign element in the natural environment of Dimple Dell Park. Man made features need to be carefully planned and designed to allow nature to dominate the environment.
The Dry Creek drainage is an enormous and complex environment covering 643 acres. Managing a property of this size and complexity, can be an overwhelming responsibility unless it is broken down and each task is defined logically and sequentially.

By dividing park management into three categories, landscape rehabilitation, land-scape preservation and park development, the logical sequence of tasks to accomplish park management begins to emerge.

2. Landscape Rehabilitation Activities

- Public Education & Awareness
  - Requires efforts by Salt Lake County
  - Requires efforts by Community and Volunteer Groups

- Reversing and Minimizing Environmental Degradation

  Problem areas:
  - Removal of noxious weeds & Trees
  - Storm drainage outlet modifications
  - Utility installation scars
  - Closure of nuisance trails
  - Clean up garbage disposal areas
  - Stream bank protection
  - Stream alignment problems
  - Culvert blow-outs

- Barren ground
- Soil erosion caused by storm water drainage systems, and drainage from adjacent properties
- Fire damaged environments
- Vandalism

3. Landscape Preservation Activities

- Public Education & Awareness
  - Requires efforts by Salt Lake County
  - Requires efforts by Community and Volunteer Groups

- Define Park Boundaries
  - Define park boundaries with fencing
  - Develop specific access points into the park

- Define Designated Trails
  - Name trails and natural park features
  - Close problem trails
  - Implement trail standards and development
  - Separate trail uses:
    - Nature Interpretive trails
    - Hiking/Cycling trails
    - Equestrian trails

- Removal of annual noxious weeds and vegetation
  - Manually remove undesirable weeds and vegetation by depleting seed source. (Multi-year campaign)
  - Allow for experimental studies for Pre-Emergent Herbicide use

- Park Features Maintenance Program
  - Organize and implement annual park resource evaluations
  - Budget funds for maintenance of park facilities and resources

- Activation of a Water System in the Park
  - Preserve water rights by activating existing well

- Revegetation Programs
  - Native seed gathering
  - Native plantings of shrubs and trees
  - Implement area closures for revegetation projects
  - Educate public about revegetation projects

- Modify Storm Drainage Outlets
  - Construct water dissipation outlets

- Vegetation and Wildlife habitat
  - Area closure in sensitive wildlife habitat
  - Provide corridors for wildlife movement
  - Area closure of Native Grasslands (Relic study areas)

- Enforcement of Park Usage Regulations to protect the park

4. Park Development Activities

- Public Education & Awareness
  - Requires efforts by Salt Lake County
  - Requires efforts by Community and Volunteer Groups

- Nature Interpretive Center
  - Building
  - Parking & access
  - Utilities
  - Interpretive trail systems & stations
  - Interpretive programs
  - Wildlife observation stations
  - Amphitheater

- Park Water System & Features
  - Develop connection to Salt Lake City aqueduct
  - Capture Bells Canyon natural drainage by developing nature stream features, ie. oxbows and ponds

- User Trails & Staging Area Improvements

- Activity Nodes
  - Observation points
  - Picnic areas (individual, group, neighborhood)
  - Nature interpretive areas

- Historic & Cultural Restoration

- Park Signage

5. Management Approach

Separating park management into three classifications, simplifies the task of identifying priorities. Before developing any park feature,

a sequence of both landscape rehabilitation and landscape preservation tasks will need to be accomplished. By completing these tasks, (revegetating disturbed sites, repairing erosion problems, removing noxious vegetation, removing garbage and waste, protecting the stream bank and many others), environmental safe-guards will be established so that activities and devel-opment will not adversely impact the site.

The process for developing any site within the park, whether the site is 50 acres or 5 acres, should not modify the sequence of tasks or preparations for development.

9.04. Park Operations and Maintenance

1. Physical Facilities and Resources

Annual inventories of park facilities such as restrooms, historical structures, nature center, parking lots, utilities, signage, staging areas and other developed activity areas of the park, which will require maintenance need to be organized and carried out by county staff. Other resources of the park such as vandalized trees, fences, trails, disturbed streambed, etc., will require immediate maintenance attention when needed.

2. Staffing

The current level of manhours spent in Dimple Dell Regional Park by Salt Lake County staff is approximately 11 hours per day. Manhour amounts increase during holidays, hunting seasons and early spring. The perceived future need for staffing hours will increase dramatically with the development of the nature center, trail systems and other activities in the park. The minimum need will include one full-time park ranger, and 2 full-time maintenance personnel year-round. Seasonal manhour needs are anticipated to be approximately 8000 hours (May thru September).

3. Volunteers

Citizens for the Preservation of Dimple Dell Park have several hundred volunteers which have donated thousands of hours in cleaning up and developing the park. A program instituted by Salt Lake County, which is not currently active, was the 'Park Watch Program'. This organization consisted of about 30 persons who were involved with monitoring user activities inside the park and reporting misconduct and abuse. Members of this group were people who use the park on a daily and weekly basis.

The purpose of this program was to:

1) Maintain the safety of park users

2) Improve and maintain the overall appearance of the park

3) Promote a sense of ownership and community involvement by park users

4) Reduce maintenance costs

In the past, county staff have worked closely with volunteer leaders in effectively accomplish tasks in Dimple Dell Park. Limited funds has prevented Salt Lake County from fully staffing the park. Volunteer efforts will continue to play an important role in managing the park.

9.05. Park Rules and Regulations

1. County Park Ordinance

Chapter 13.04 of The Salt Lake County Ordinances defines the rules and regulations for all County parks and facilities. The following sections of this ordinance apply to Dimple Dell Park:

13.04.010 Purpose.
13.04.020 Definitions.
13.04.030 Control of Parks.
13.04.040 Hour of use.
13.04.050 Motor vehicle restrictions.
13.04.060 Business vehicles.
13.04.070 Bicycles permitted.
13.04.080 Snowmobiles permitted in certain areas.
13.04.090 Paths, trails or roads.
13.04.100 Animals prohibited - Exceptions.
13.04.110 Animal control.
13.04.120 Tethering animal to tree or structure prohibited.
13.04.130 Interference with animals or fowl prohibited.
13.04.140 Hunting and fishing.

13.04.150 Swimming and wading.
13.04.160 Restroom facilities.
13.04.170 Concession stands.
13.04.180 Distribution of advertising material.
13.04.190 Games restricted to designated areas.
13.04.200 Camping restricted to designated areas.
13.04.210 Littering prohibited.
13.04.220 Fires - Permit required - Designated area.
13.04.230 Firearms and explosives prohibited - exception.
13.04.240 Disobeying signs.
13.04.250 Noise restrictions.
13.04.260 Boisterous conduct prohibited.
13.04.270 Unauthorized assembly.
13.04.280 Defacing or destruction of property.
13.04.290 Violation - Eviction.

2. Special Considerations

1) Curfew - An established hour for curfew in the park will be 11:00 p.m.

3) Alcohol - Consumption of alcoholic beverages are not permitted in the park. Alcohol is prohibited in all Salt Lake County Parks.

3) Injury Prevention Plan - The prevention of injuries is the responsibility of the entire park staff (volunteer or paid). There is a moral and legal responsibility for providing safe rec-recreation areas in which the park users may recreate with a minimum expectation of being injured. All park staff should routinely monitor areas of the park and immediately report hazardous conditions to park officials.

5) First Aid and Emergency Services - All staff shall become familiar with basic first aid techniques by completing the first aid course offered by the American Red Cross or Emergency Training Council. Access to a telephone shall be provided at the caretakers residence for emergency calls.

APPENDIX A

TRAIL MITIGATION ALTERNATIVES

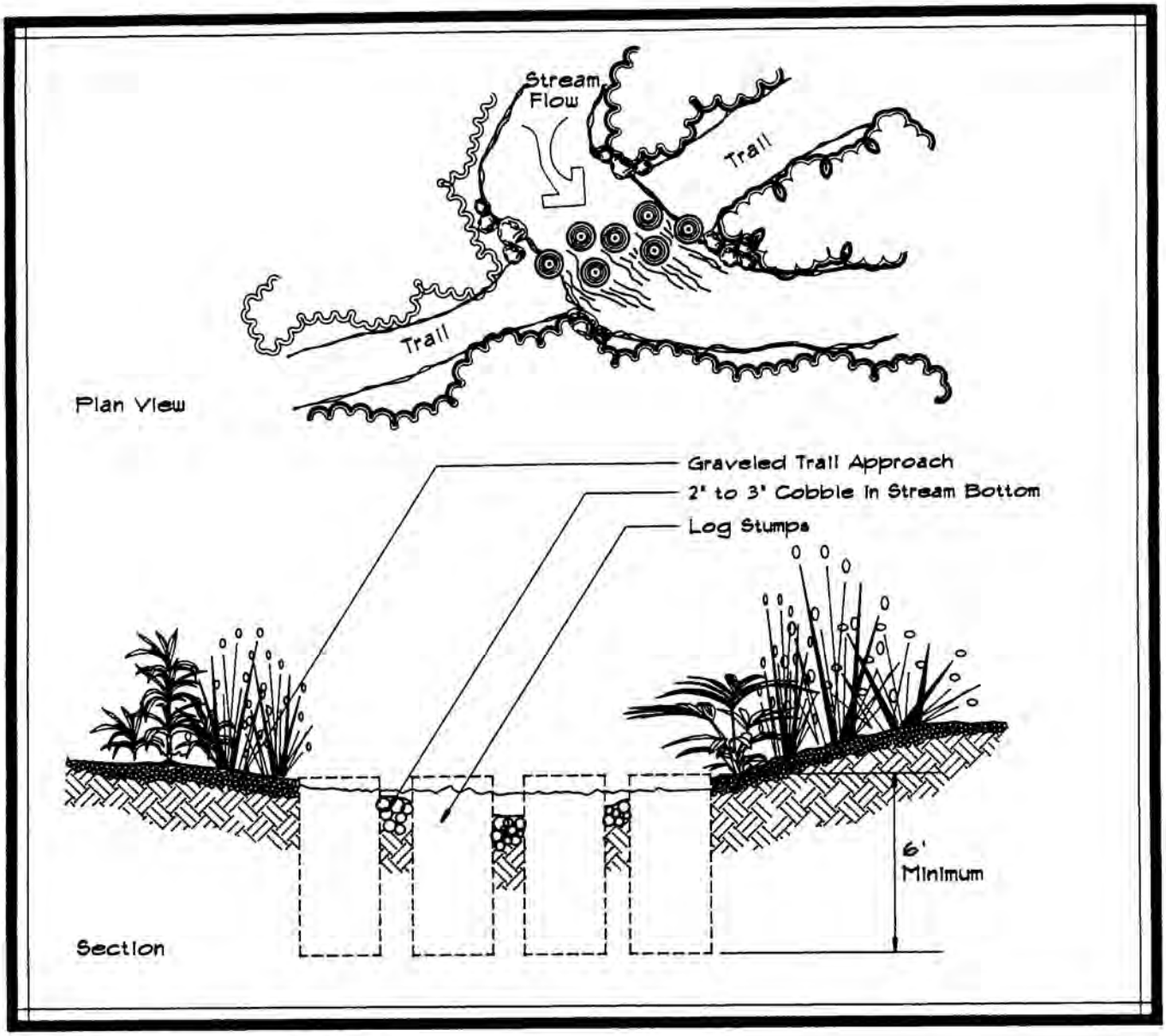


Figure A-1. Embedded Stumps

Trails cross the water channel in several locations. The embedded stump crossing is designed for the pedestrian park user. The placement of stumps in the streambed, enhance the wilderness feeling in the park. Stumps are much like stepping stones which naturally occur in streams. The stumps must be burried in the streambed adequately to prevent them from being washed away by stream flows. The diameter of the stumps should not be less than 12 inches. The top of the stump should be level and smooth, and needs to be a minimum of 4 inches above the water surface during peak flows. The streambed shall be widened to facilitate proper water flows where the stumps are installed

Embedded Stump Stream Crossing

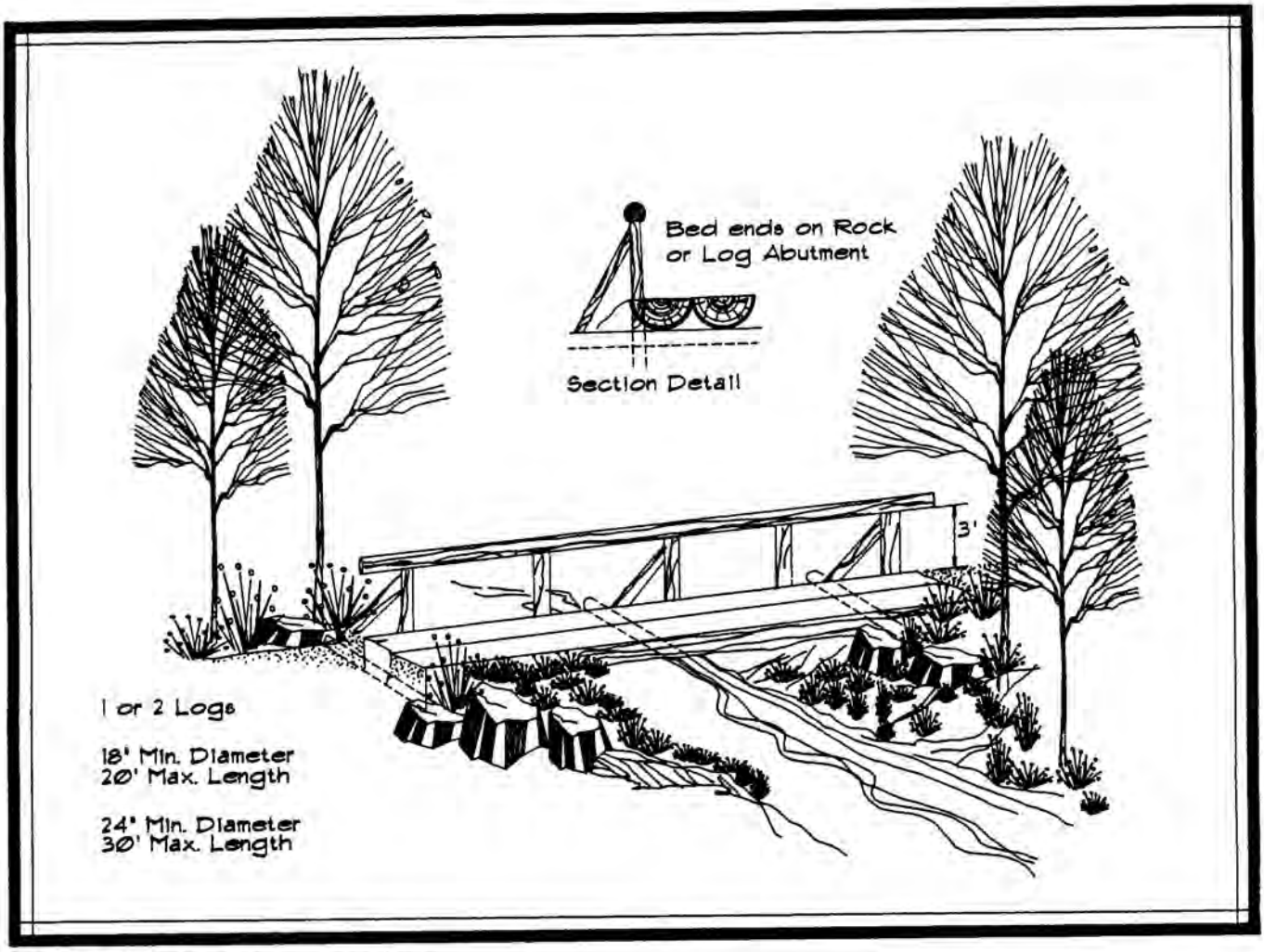


Figure A-2. Split Log Bridge

An alternative to imbedded stumps in the streambed as a crossing, is a split log bridge. The split log bridge is simple to construct and it uses native materials. The hand rail adds safety to crossing. Equestrian and bicycle riders are not allowed on this bridge because of the uneven nature of the surface and gaps between logs that do occur.

Split Log Bridge

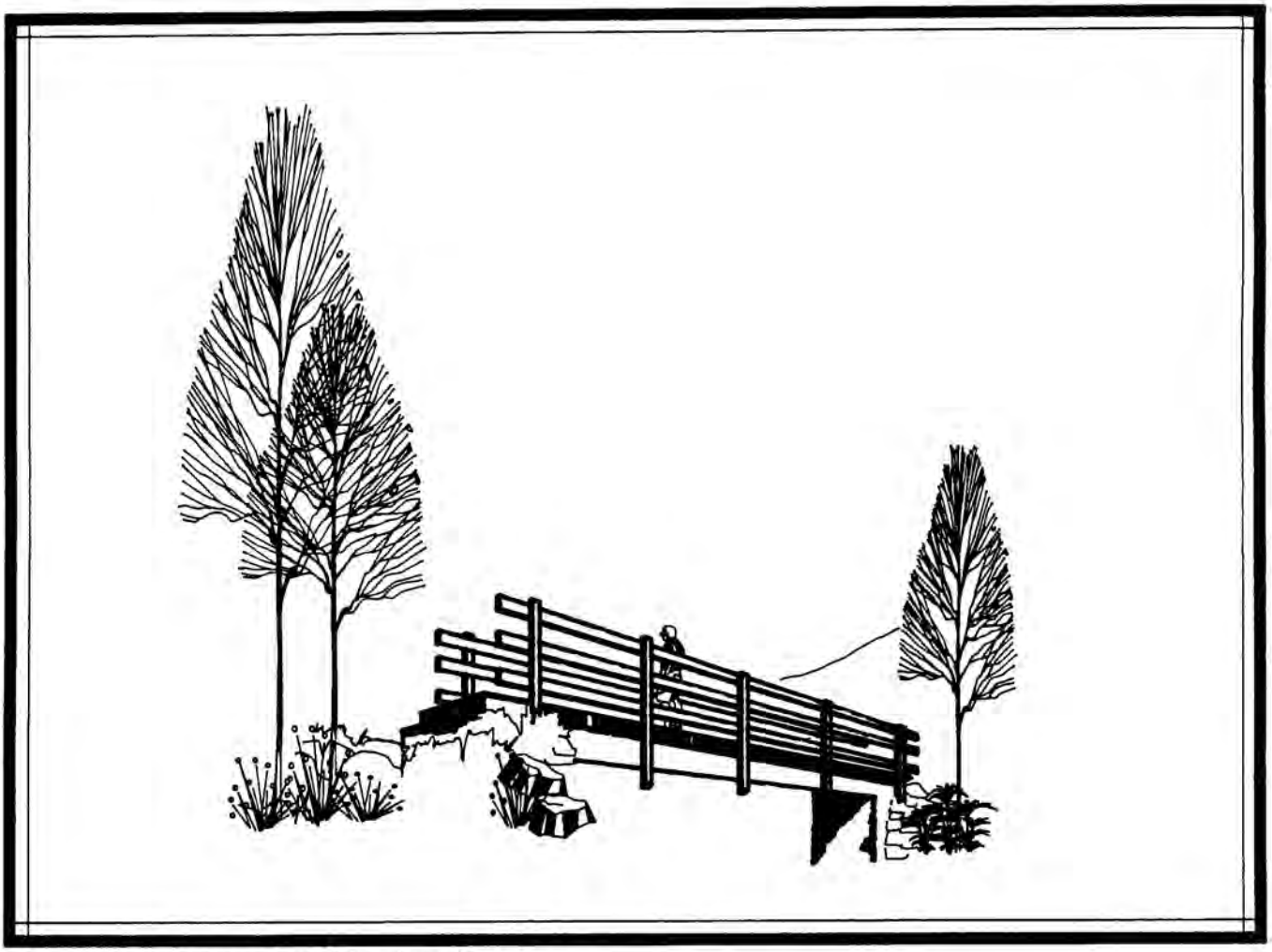


Figure A-3. Dimensional Lumber Bridge

A secure bridge that will blend well with the natural environment of the park is a dimensional lumber bridge. This bridge will require poured in place concrete abutments and treated timber posts, rails and beams. The labor required to construct this bridge is more intensive than the stream crossing structures previously mentioned. The materials for this bridge are also more costly.

The life expectancy of this type of bridge is 30 years or more. This bridge can accommodate all types of users, pedestrian, bicyclist, and equestrian. This bridge, if built to adequate size and structure requirements, can also accommodate emergency vehicles.

Dimensional Lumber Bridge

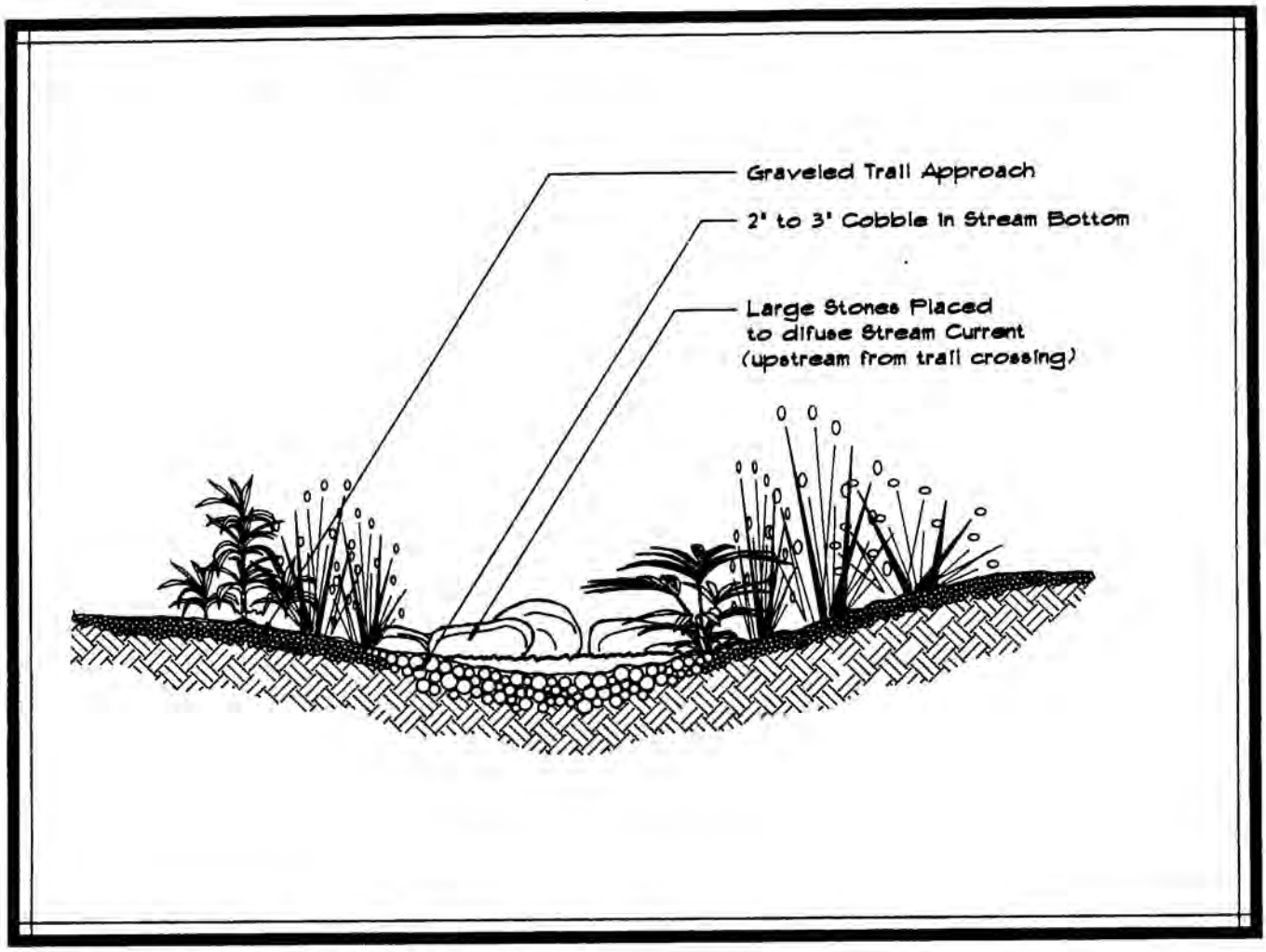


Figure A-4. Bicycle Stream Crossing

Stream crossings for bicyclists can be accomplished by widening and stabilizing the stream bed. At designated stream crossings, the stream will need to be slighly widened to reduce the depth of water. The placement of small diameter rip rap (2" to 3") in the bottom of the stream bed, will provide a stable base for bicyles. Immediately upstream from the stream crossing, large boulders or embedded stumps should be placed in the channel to disapate the energy of the stream. Stream banks at trail crossings are not to exceed 10 percent slope. Trail approaches can be stabilized by placing either gravel or porous paving materials on them.

Bicycle Stream Crossing

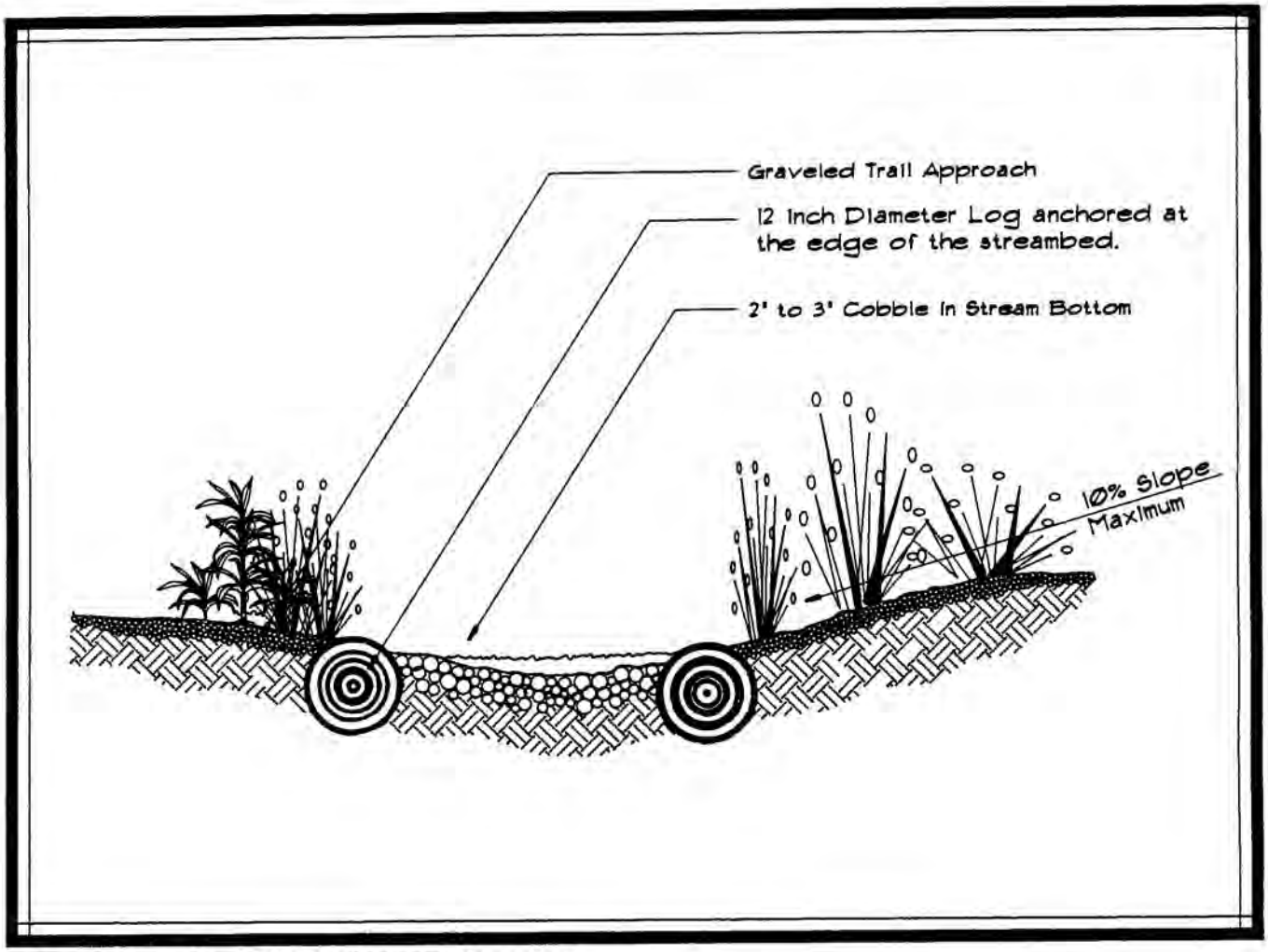


Figure A-5. Equestrian Stream Crossing

The equestrian users cross Dry Creek frequently as they ride through the park. Riding in the streambed, adds to the enjoyment and excitement of the ride. Horses cause tremendous disturbance to trails, especially those in or near the stream corridor. A trail structure that can be put into place to mitigate trail disturbances is the horizontally embedded log. Placed at the base of the slope, at the edge of the streambed, the log can prevent excessive trail erosion.

Maximum slopes for trails entering the stream corridor are not to exceed 10 percent. Logs need to be secured at the stream edge to reduce the amount of disturbance to embankments.

Equestrian Stream Crossing

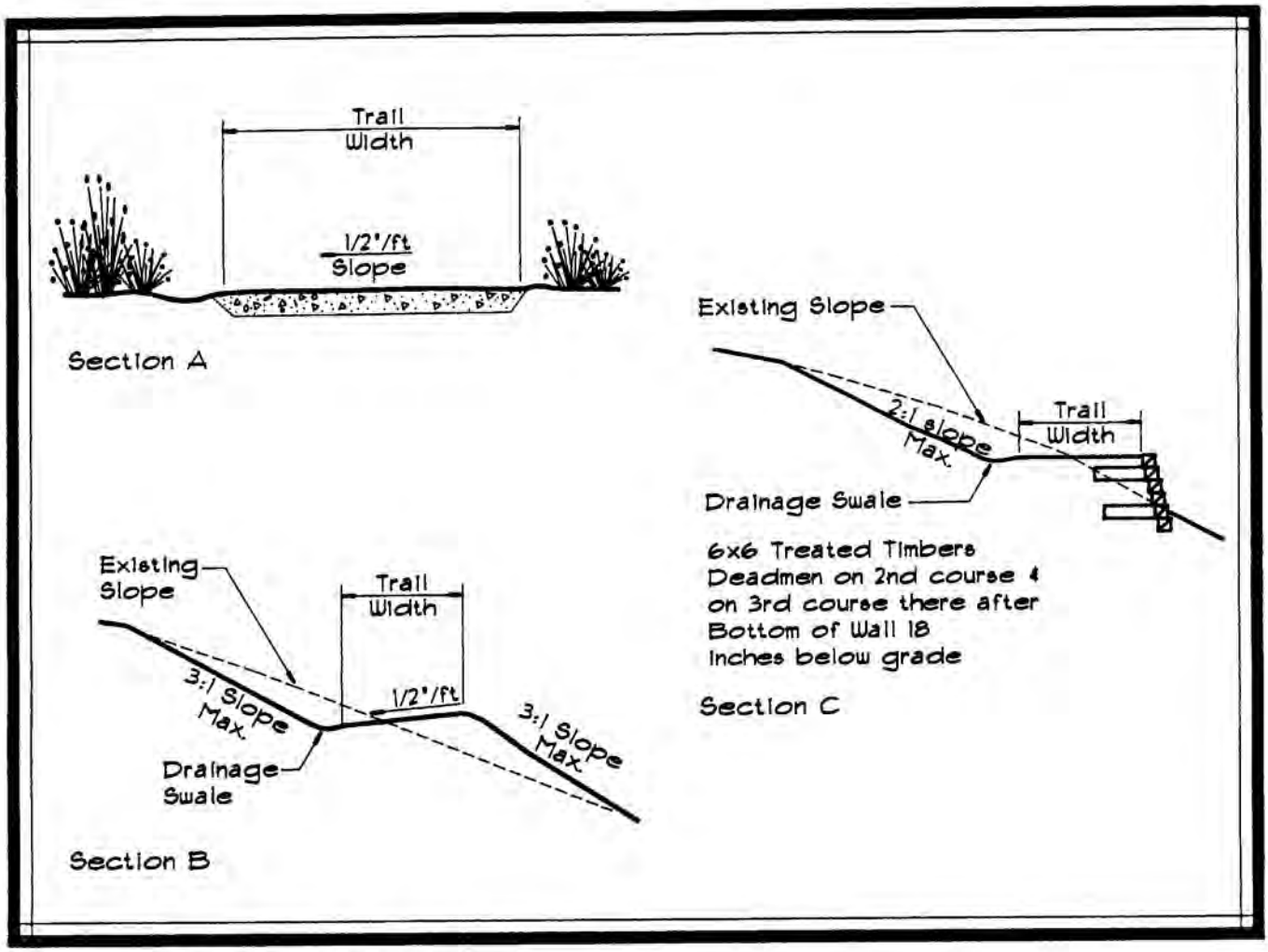


Figure A-6. Trail Cross Sections

Section A depicts a trail on flat terrain. It has a cross slope of 1/2 inch per foot sloping toward a drainage swale.

Section B shows the grading scheme for a trail on a moderately steep slope. Retainment of the cut and fill slopes up to 3:1, should not be necessary. However, sandy soil types may dictate some form of retainment be put in place.

Section C is a trail located on a slope 2:1 or greater. Retainment of the cut and fill slopes is necessary with either timber or rock walls.

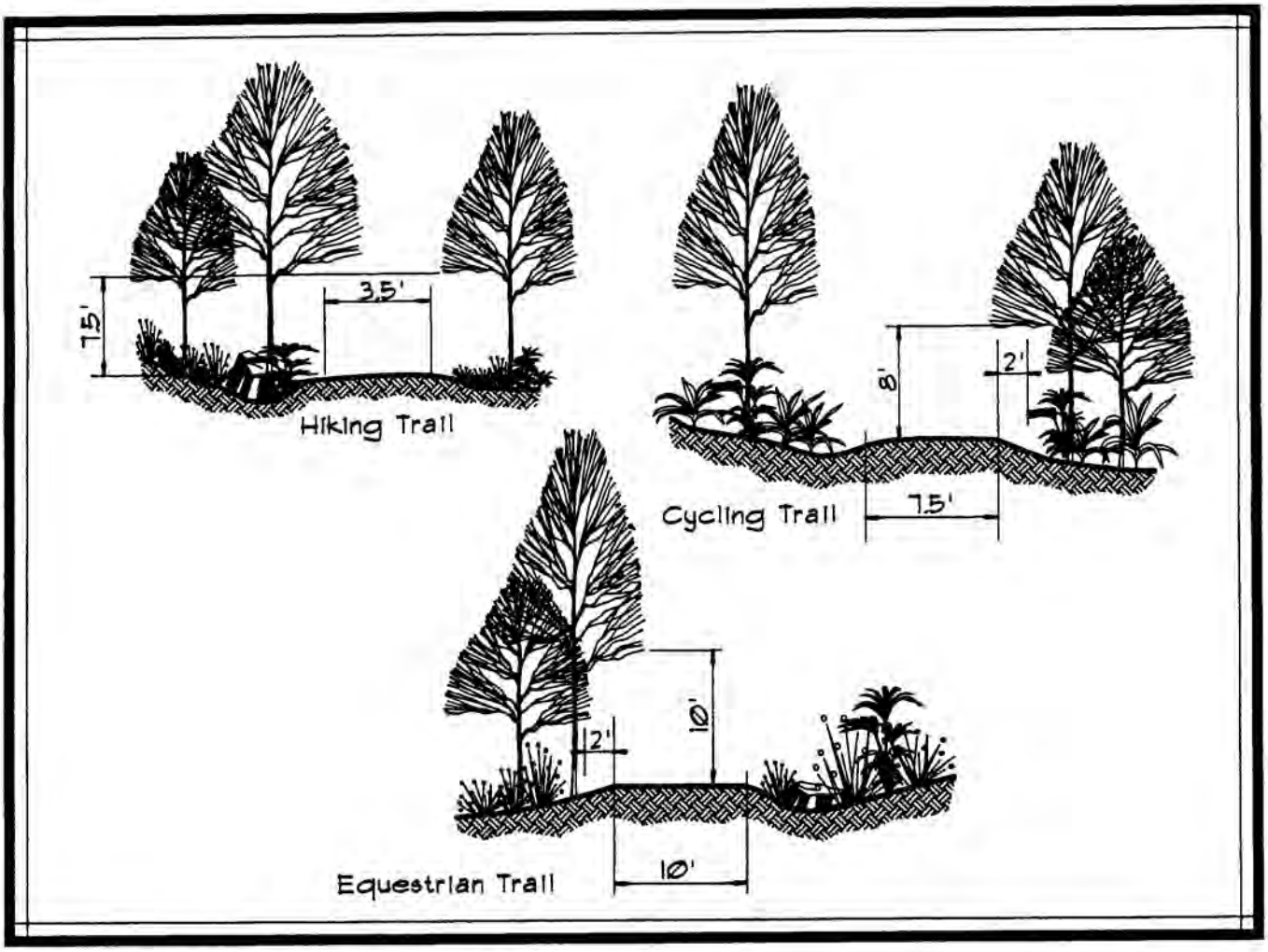


Figure A-7. Trail Clearing Standards

These standards are to be used as a guide for trail construction and vegetation clearing efforts. Circumstances may arise where modifications to these trail widths and clearances must be allowed. The trail standards above are designed for two-way circulation. When possible, trails should be built to follow the contour of the land. Trail gradients should not exceed 15 percent slope. Trail slopes greater than 15 percent are difficult to climb and are not acceptable for interpretive trails. A trail grade of 10 percent is considered maximum for comfortable walking.

Trail grades for equestrian users can be greater than 15 percent, however, excessive disturbance to trails and surrounding environments generally occurs with steeper trail grades.

Trail Clearing Standards

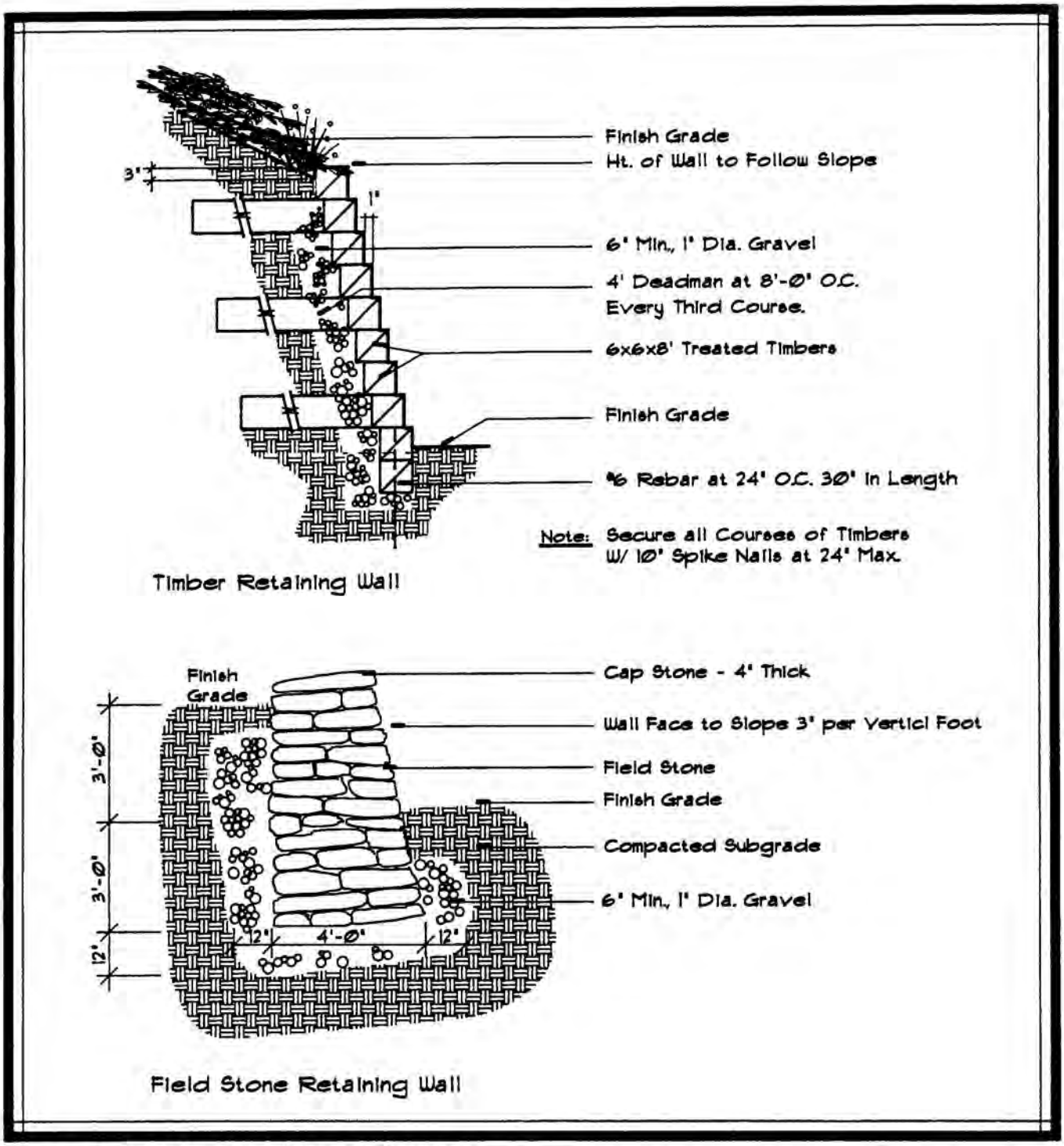


Figure A-8. Timber/Rock Retaining Walls

Trails along a hillside may require retaining walls. The retaining walls to be used in the park are to be constructed of treated timbers or native field rock, as shown in figure 8.

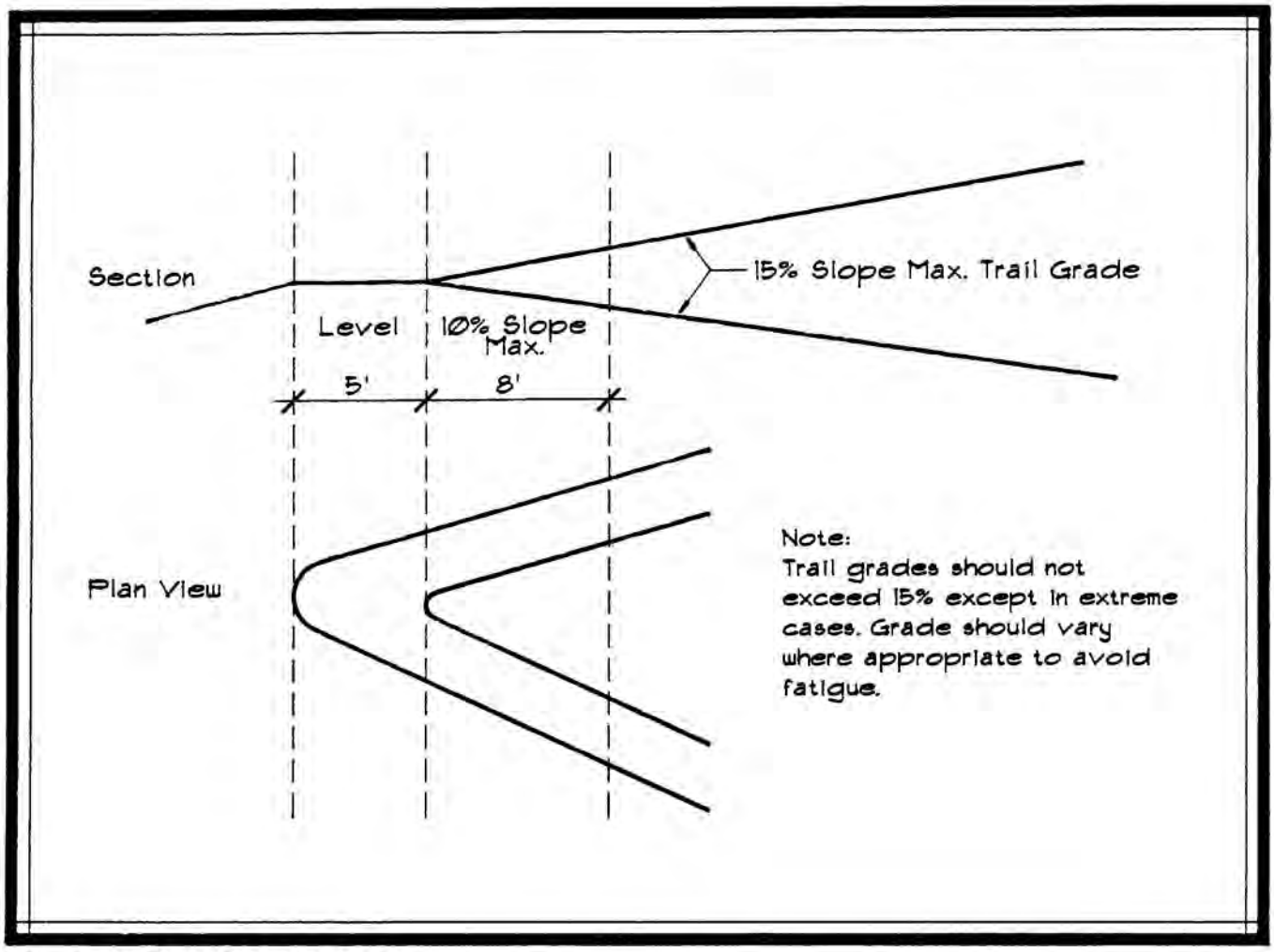


Figure A-9. Trail Switchback

When a switchback is required on a steep trail, certain criteria must be followed to insure a smooth transition of the trails vertical and horizontal alignment. The maximum grade on a steep trail should not exceed 15%. Eight feet before the switchback, the grade needs to flatten to 10% maximum and become flat at the switchback. An outside curve radius of 4' and an inside curve radius of 1', is standard for a pedestrian trail. Bicycle trails require an inside radius of 6' and an outside radius of 13' as a minimum for the switchback. These radii are for minimal cycling speeds. The switchback layout for an equestrian trail is 4' for the inside radius, and 14' for the outside radius. Long, gradual switchbacks are recommended, rather than short steep switchbacks.

Trail Switchback

TRAIL TYPE	FREQUENCY OF USE	SURFACE TYPE
PEDESTRIAN Hiking/Jogging	Low	Natural Soils Wood Chip
Interpretive	Moderate	Wood Chip Crushed Stone
Interpretive	High	Asphalt
CYCLIST General	Low-High	Natural Soils Wood Chip Crushed Stone Asphalt
EQUESTRIAN General	Low-High	Natural Soils Wood Chip

Figure A-10. Trail Surfacing Types

Trail surfacing materials must be appropriately matched to the intended trail use. Trails dedicated to specific uses, will require a certain type of trail surface. Some pedestrian trails and the interpretive trail loop from the nature center, will require a more stable trail surface, than the equestrian or bicycle trails surfaces.

The chart above identifies trail types and appropriate trail surfaces.

Natural soil is allowable for trail surfaces, provided the slope and character of the soil support the intended uses.

Trail Surfacing

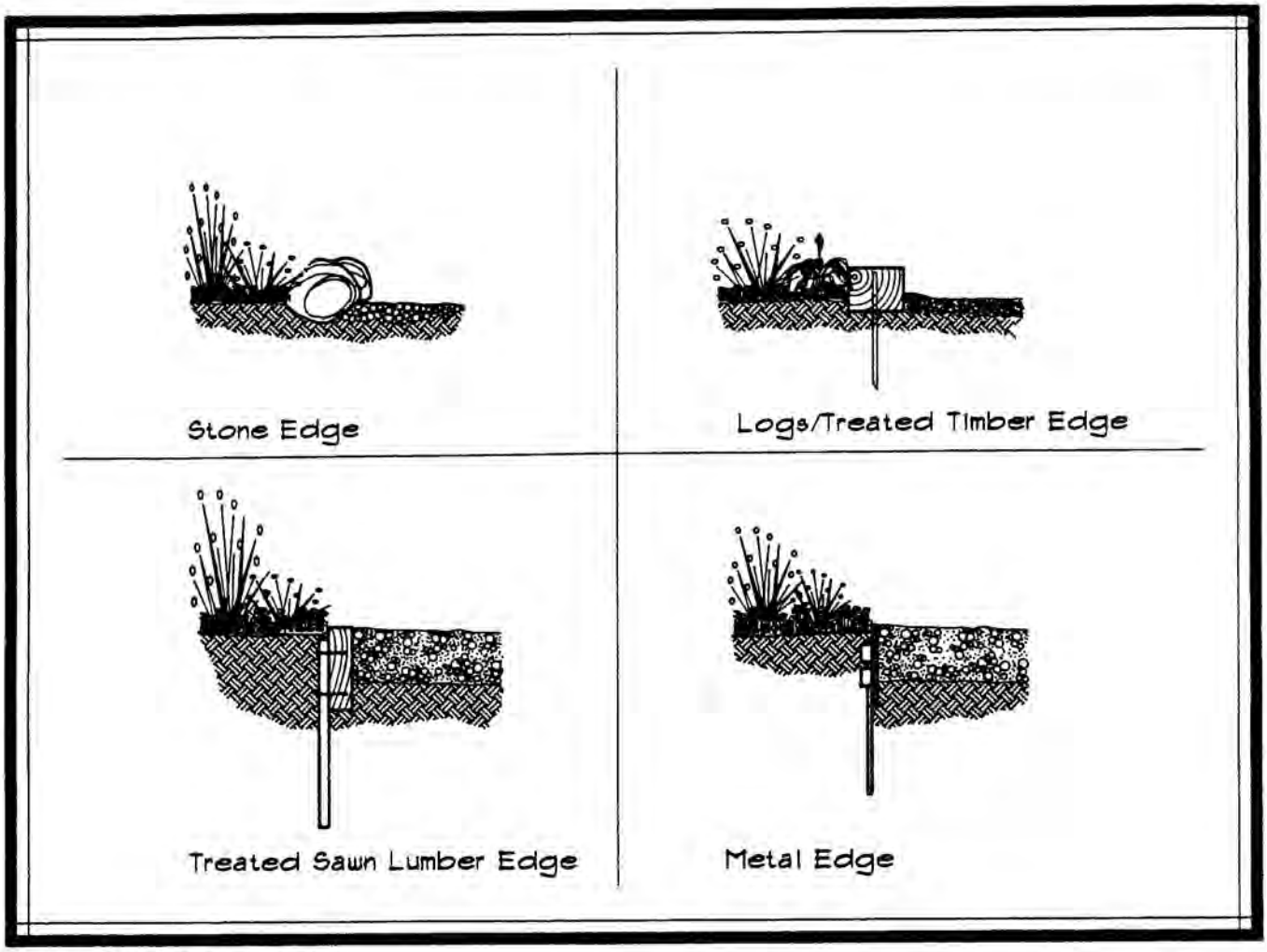


Figure A-11. Trail Edging

Improving trail systems in the park with trail edging materials, will help establish appropriate trail widths, protect fragile plant environments, and lowers trail maintenance costs. The need for edging treatments can be determined by the frequency of trail useage, and the type of soil where the trail is aligned. There are several trail edging alternatives appropriate for Dimple Dell Park. The following chart identifies four types of trail edging materials and their uses.

Edge Type	Useage
Metal	High use asphalt paved interpretive trail.
Treated Sawn Lumber	High use asphalt paved interpretive trail.
Logs/Treated Timbers	Moderate use interpretive trail. Equestrian trail with sandy soils with wood chip surface.
Logs/Native Stone	Hiking trail, bicycle trail with wood chip or natural soil surface.

Stone edging should occur in areas of the park where sizable native stone is available and where stone edging could be appropriately used. Avoid using stones less than 8" in diameter. Metal, treated dimensional lumber, and treated timber trail edging may be used with any trail type, however they are not recommended for remote secondary trails due to increased costs.

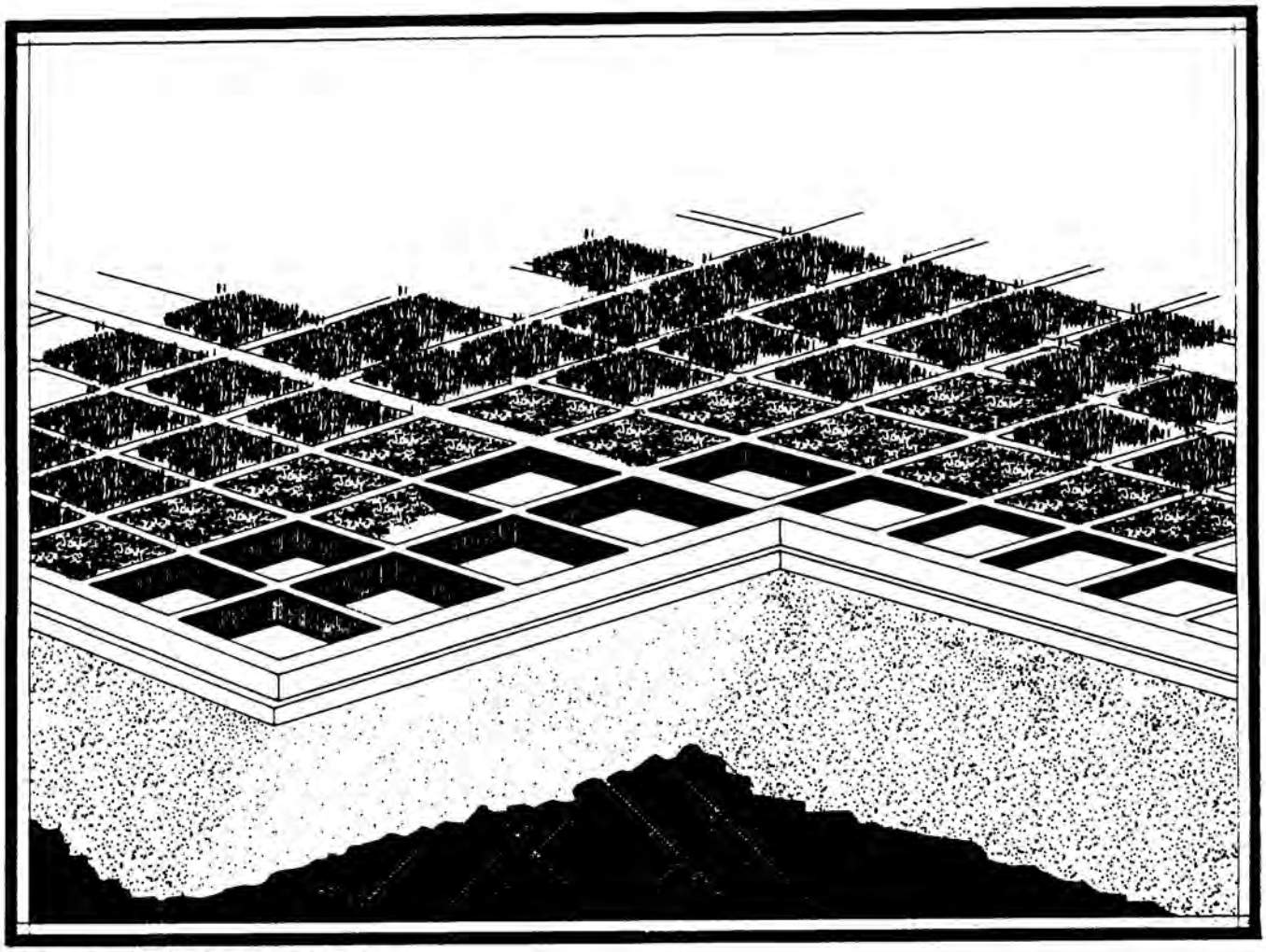


Figure A-12. Porous Paving

Although motorized vehicles are prohibited in Dimple Dell Park, adequate emergency and service access must be provided. Vehicle access lanes must be maintained by keeping brush and tree branchs from grouning into the access lane. The surface of the emergency lane can be planted with either native grasses or wildflowers. The native soils in the park are generally unstable for supporting heavy service or emergency vehicles. Several different porous paving products are designed and manufactured to help stabilize roadways. Porous paving units can allow vegetation to grow inside the open grids, while supporting occasional vehicle traffic. The low growing vegetation in the paving unit, will lessen the visual impact of pavement in the park.

Surface water from storms and snow melt, percolate through the paving units and into the soil, avoiding the need for gutters or drains.

Emergency/Service Access Paving

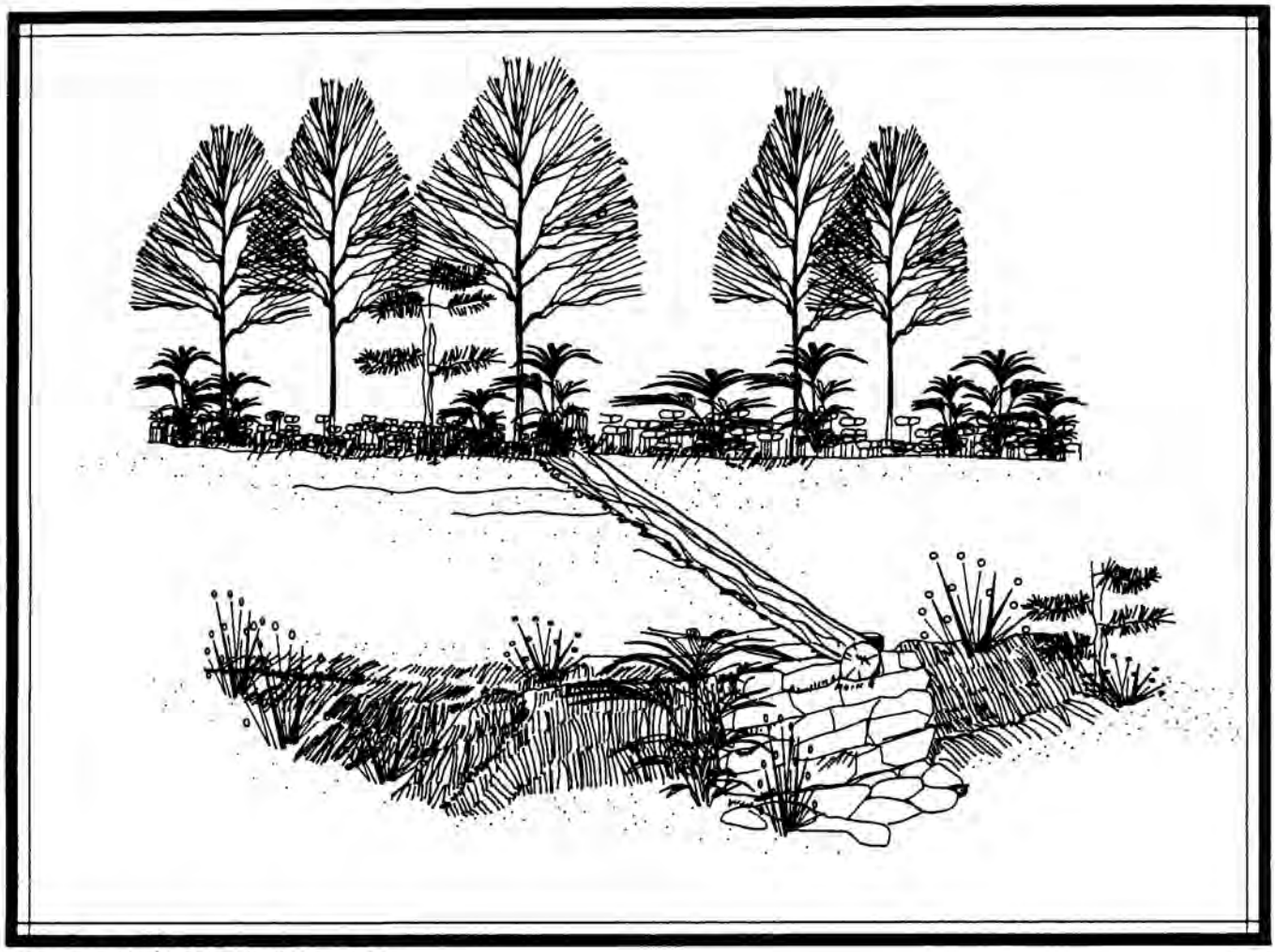


Figure A-13. Trail Water Bar

Controlled drainage on trails is very important. The sloped terrain and soil types in Dimple Dell Park, create constant erosion problems, especially on trails. Controlling surface drainage on trails needs to be a maintenance priority. An effective method of collecting and directing the flow of run-off on trails, is to use a water bar system.

Water bars minimize velocity, volume, and distance, which water flows down a trail. Water bars interrupt drainage patterns and channel the water toward structures designed to handle the runoff. The number and spacing of water bar structures on a trail, depends on several site factors, slope, the amount of water entering the trail, and available areas to divert water to.

To build a rock or log water bar, a trench needs to be dug across the trail at a 30 to 40 degree angle to the trail. Bars placed at less than 30 degrees may slow water too much, causing the bar to clog with silt and debris. Bars placed at 30 to 40 degrees, will clean themselves as water flows freely off the trail. Bars placed in excess of 40 degrees produce scour erosion along the bar face.

If the water bar is constructed of wood, the log should be placed in the trench with over half of its diameter burried below the trail surface. The log should be solidly placed, if possible, wedge it between rocks. If using stakes to secure the water bar, place notches on the downhill side of the log to accept each stake driven into the ground.

Water bars are typically constructed on general hiking trails only.

Trail Drainage

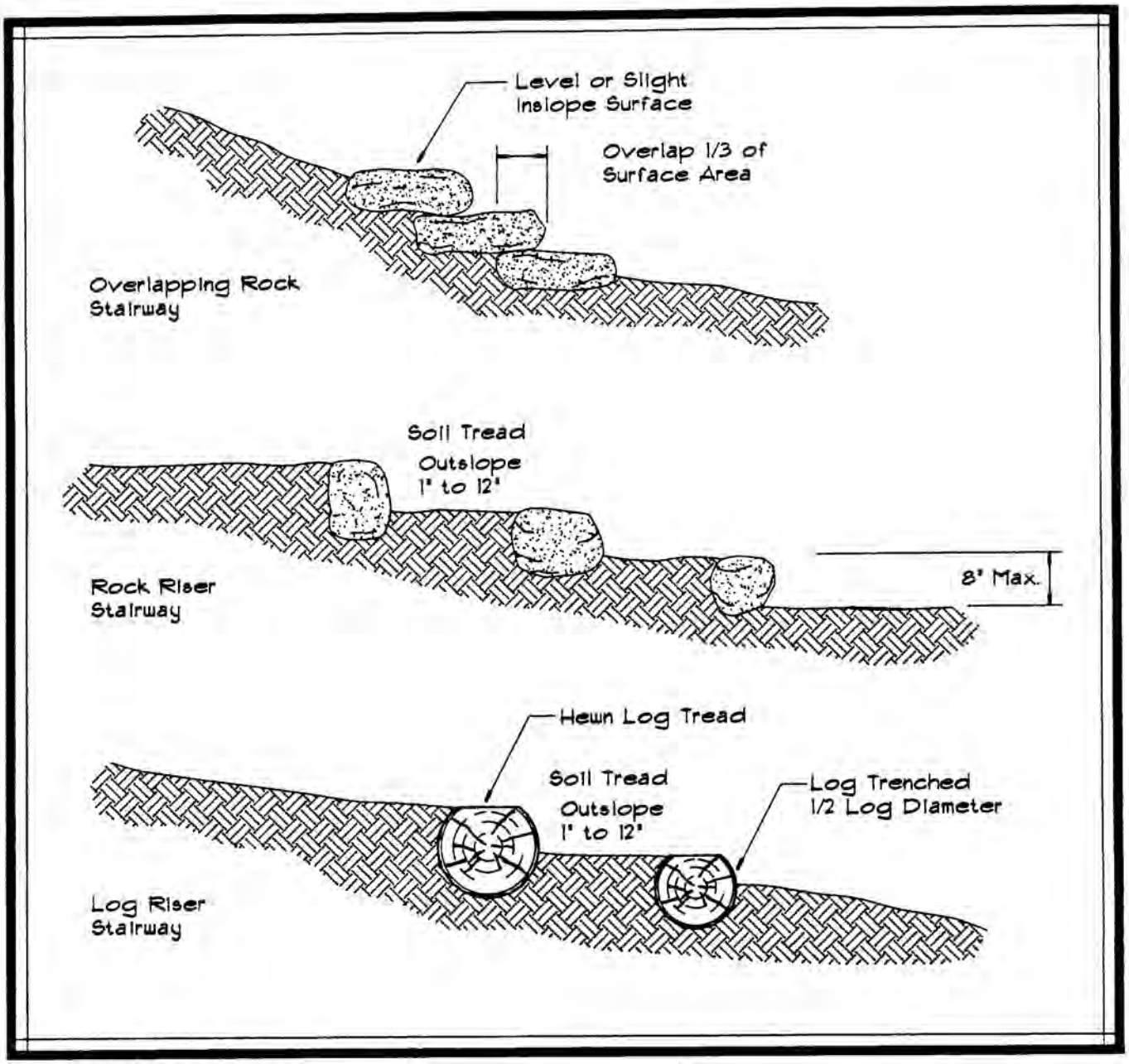


Figure A-14. Trail Stairways

Stone or rock steps can be used where trail grades exceed the maximum allowable slopes and where elevation must be gained quickly. Stairs should not be used on trails which are used by equestrians, bicyclists or by handicaped persons. All steps should be built to withstand intensive use and impact. In constructing the steps, use large enough rocks to span the width of the trail. The rise and tread dimension of stairways should remain uniform.

Alternative materials which can also be used in constructing trail stairways are logs or treated timbers. These materials are less resilient than rock materials and will wear out over time. Both log and treated timber steps must be anchored into the ground by lengths of rebar to be stable.

APPENDIX B

EROSION MITIGATION ALTERNATIVES

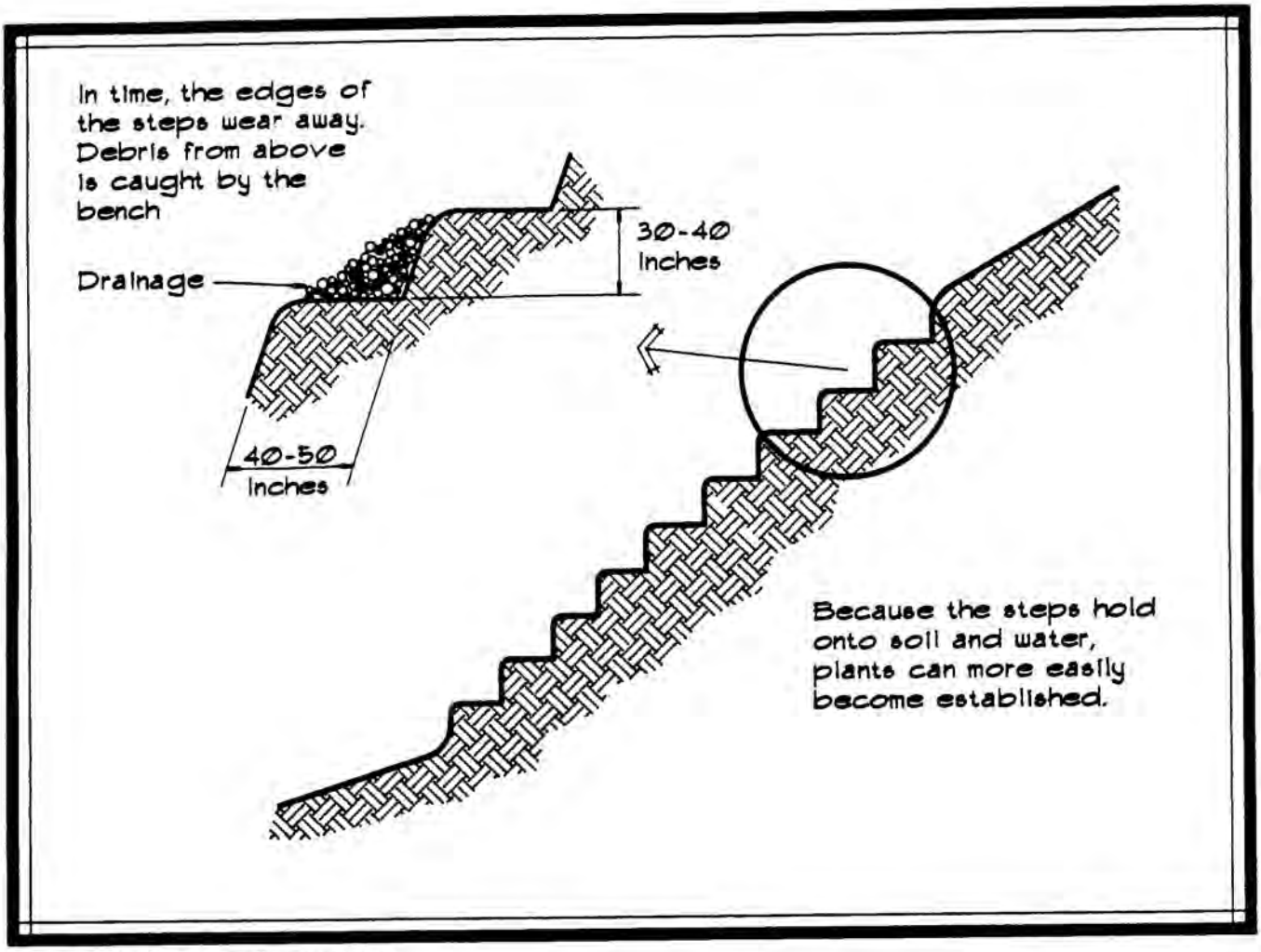


Figure B-1. Stair-Stepping

An important factor in reducing soil erosion is to control drainage. One method of reducing slope erosion is to create terraces or steps. Slope terracing can reduce runoff distance by creating artifical flat areas where water can percolate into the soil. In some places, the terraces should be combined with drainage swales to collect water runoff and direct it into the Dry Creek streambed. With slopes greater than 3:1, stair-stepping can greatly enhance the natural revegetation process. As time progresses, the steps will deteriorate and fall onto the bench below, which will provide loose soil for seedlings to become established in. By the time the terraces are worn down and obliterated, vegetation will have reclaimed the slope.

Stair-stepping is a desirable alternative for slowing erosion where the terraces will stay intact for extended periods of time. This method is not as successful on sandy loose slopes.

Creating terraces on steep slopes is best completed by using hand tools. When beginning, start at the top of the slope and work down. There should never be a sharp break in the slope and the lip of each step should be rounded. Do not break up clods or smooth any surfaces, this will only reduce the chance for seedlings to become established.

Stair - Stepping

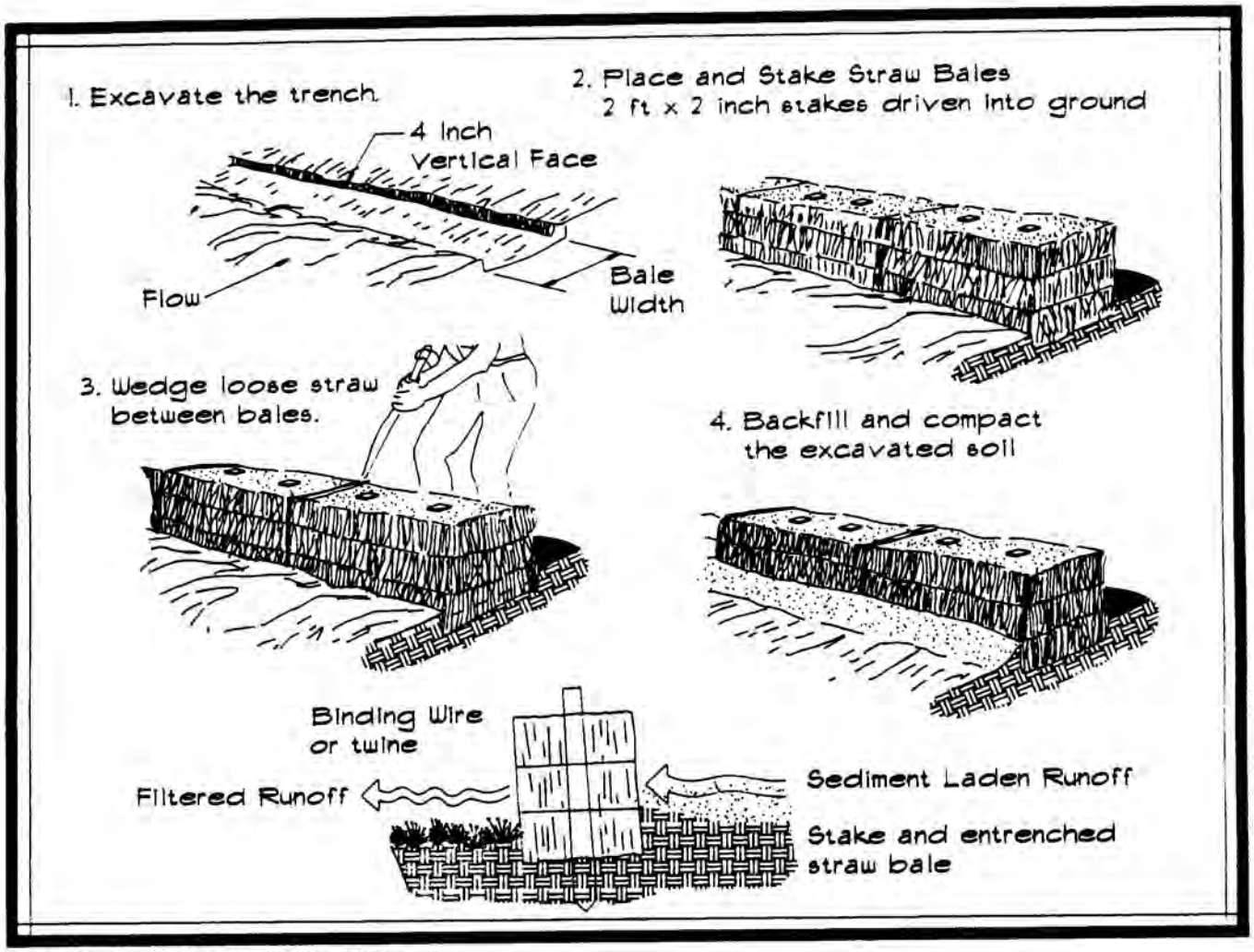


Figure B-2. Straw Bale Dike

To install a straw bale dike, excavate a 4 inch trench the width and the length of the proposed barrier. The barrier should follow the contour of the land and maintain a constant elevation. If the barrier is at the toe of a slope, the barrier should be placed 5 to 6 feet away from the slope if possible. This placement will provide for access to maintain the structure and also allow sediment to drop out of suspension before it reaches the barrier. Place the bales in the trench with their ends tightly abutting. Corner abutment is not acceptable. A tight fit is important to prevent sediment from escaping through the spaces between the bales. All bales must be either wire-bound or string-tied. Install bales so that bindings are oriented around the sides rather than along the tops and bottoms of the bales. If the binding is placed in contact with the soil, it will soon deteriorate and cause the structure to fail apart.

Sediment barriers have a useful life of 3 to 6 months, depending on materials used. Straw bales last approximately 3 months; silt fences can function for 6 months or longer if sediment accumulations are removed. Silt fences also trap a higher percentage of sediment than straw bale structures.

Sediment barriers are perceived as inexpensive and easy solutions for erosion control. However, when placed in poor locations and improperly installed and maintained, there is frequently more damage produced than if no barrier had been installed. Limitations on the installation of straw bales for erosion control should be strictly observed.

1. The area draining to the barrier shall be 1 acre or less. 2. The maximum slope gradient behind the barrier shall not exceed 2:1. 3. The maximum slope length behind the barrier shall not exceed 100 feet. The need for proper installation cannot be over emphasized.

Straw Bale Dike

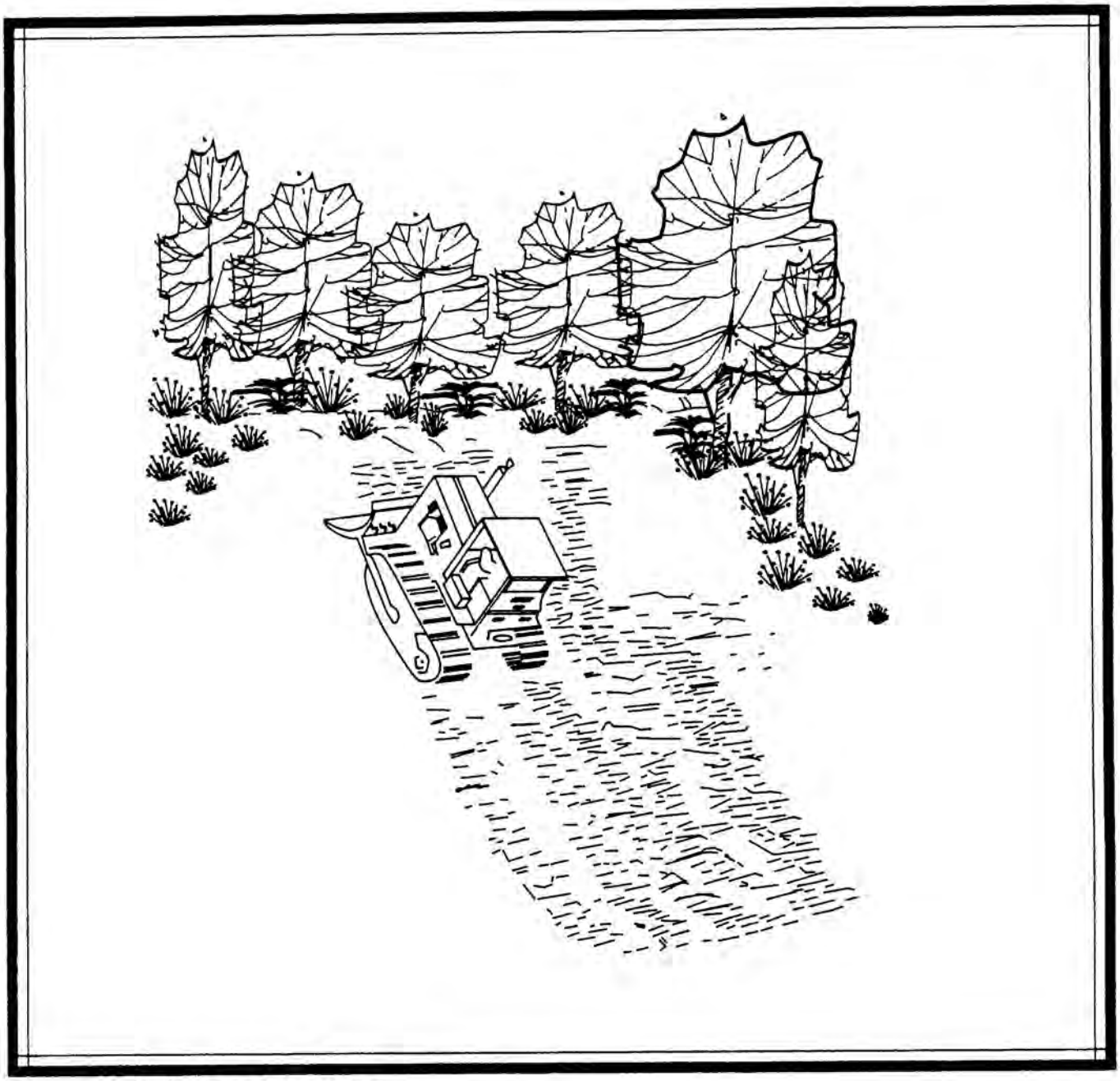


Figure B-3. Surface Roughing

Prior to seeding or planting a slope to prevent erosion, the soil surface should be roughened. There are a number of mechanical or hand methods to accomplish this task. One of the most cost effective methods is to use a bulldozer and walk it up and down the slope. This method, called trackwalking, leaves a pattern of tread imprints parallel to the slope contours. The tread indentations are ideal places to trap seeds and encourage plants to become established. The tracks also slow the velocity of runoff and thus lowers the volume of water running perpendicular to slope contours.

Surface Roughing

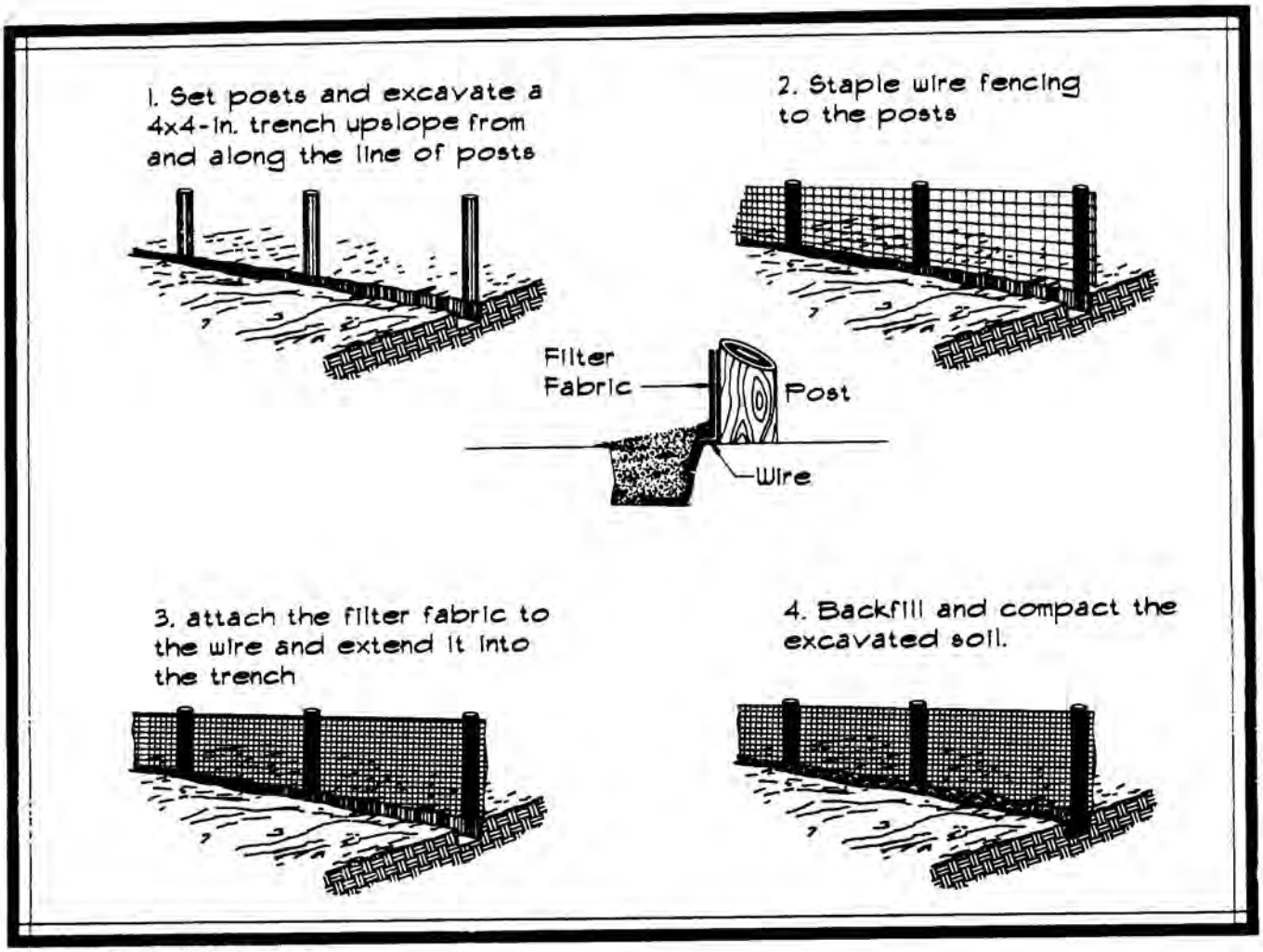


Figure B-4. Silt Fence

A silt fence is a temporary structure made of wood or steel posts, wire mesh, and a suitable permeable filter fabric. It has two functions: A) retention of the soil on site and B) reduction of runoff velocities across areas below the fence. Although the fabric retains some soil particles by filtration at its surface, the portion of eroded soil that contacts the fabric is only a small portion of the total volume of retained solids. The reduction in runoff velocity at the fence causes suspended soil particles to settle.

A silt fence has the same design limitations as a straw bale dike.
1. Drainage area - 1 acre or less.
2. Maximum slope steepness - 2:1
3. Maximum flow path length to the fence - 100 feet
4. No concentrated flows greater than 1 cubic foot/sec.

Correct installation is important. Trenching, firmly setting posts, and securely stapling the wire mesh and filter fabric to the posts are key construction details.

Layout a suitable fence line and set post along it. On slopes, align the fence along the contour as closely as possible. In small swales, curve the fence line upstream at the sides to direct the flow towards the middle of the fence.

(Silt Fence continued on next page)

Space posts 10 feet apart and drive them a minimum of 24 inches into the ground. Posts for fence can either be 4 inch diameter wood or 133 lb/ft steel with a minimum length of 5 feet. Steel posts must have projections for fastening wire to them.

Excavate a trench approximately 4 inches wide and 4 inches deep along the line of posts and upslope from the barrier. Fasten wire mesh securely to the upslope side of the posts. Use heavy-duty staples at least 1 inch long to attach filter fabric and wire mesh to wood posts. Extend the wire mesh 6 inches into the excavated trench. Wire fencing for silt fences must be a minimum of 42 inches wide, be a 14 gage wire, and have a maximum mesh spacing of 6 inches. Fasten the filter fabric to the uphill side of the fence posts and extend it 8 inches into the trench. The height of the fence should not exceed 36 inches. Do not staple fabric onto trees. Cut the filter fabric from a continuous role to avoid the use of joints. When joints are necessary, splice the filter fabric cloth at a support post, with a minimum 6 inch overlap, and securely fasten both ends to the post. Backfill the trench over the toe of the fabric and compact the soil.

Filter fabric can be used in combination with straw bale barriers. The installation is identical to using straw bales. The filter fabric helps keep the straw bales more intact and increases the ability of the barrier to filtrate.

Figure B-5. Silt Fence

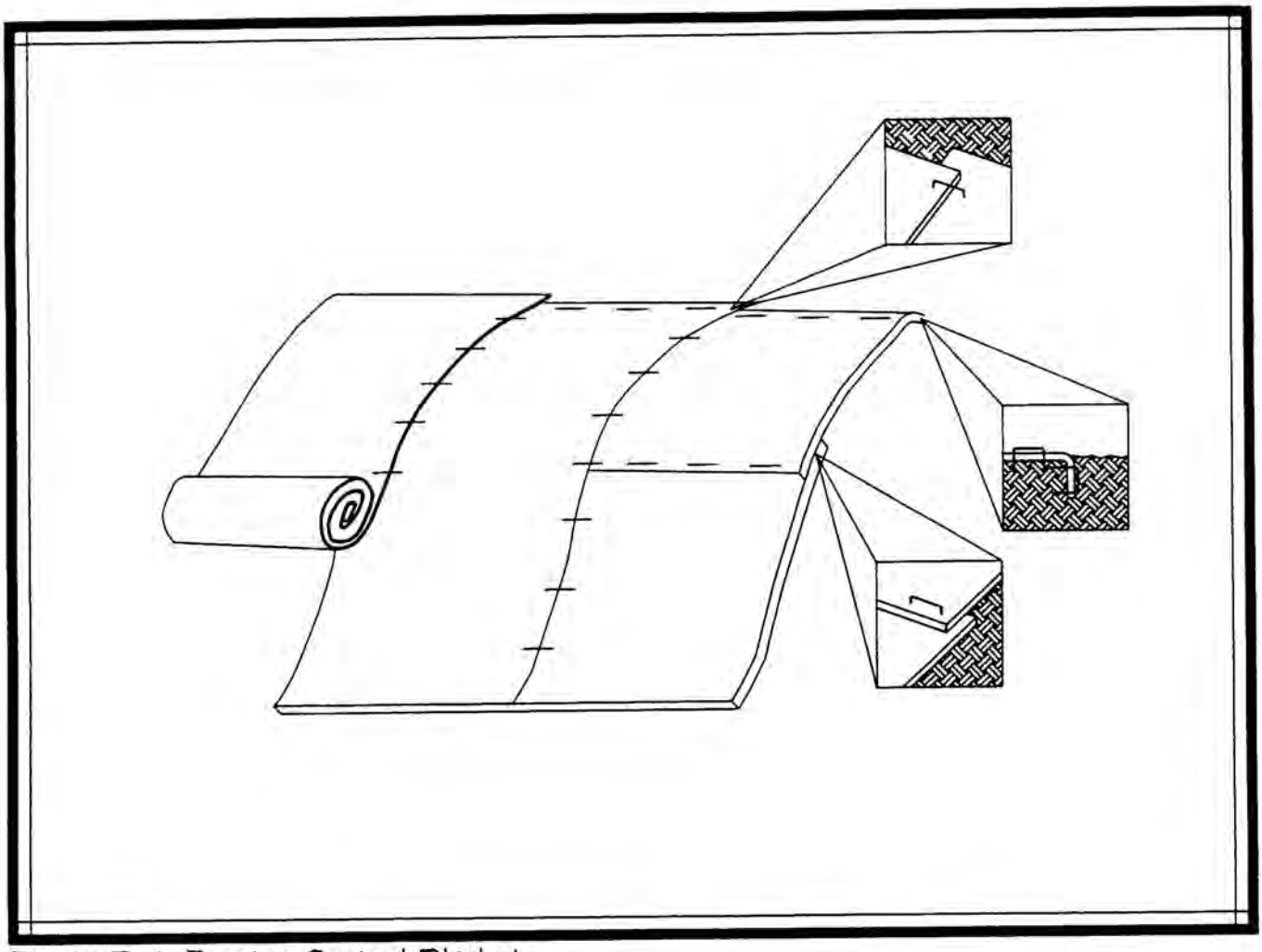
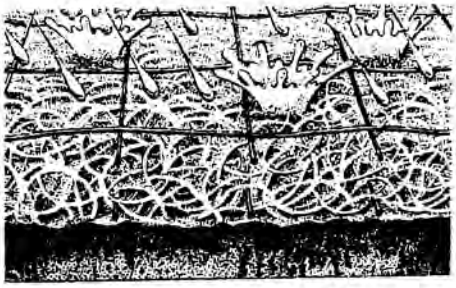


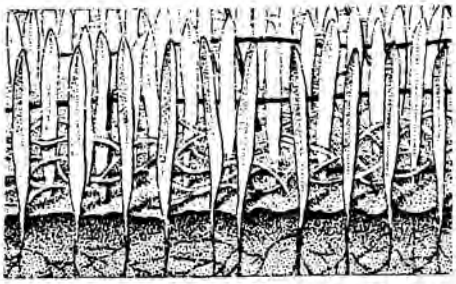
Figure B-6. Erosion Control Blanket

The use of erosion control blankets and nettings are considered to be temporary erosion solutions. Using these materials alone is generally not as effective as when they are used in combination with planting and mulching. The benefits erosion control blankets and nettings offer are: 1) stabilization of soil surfaces and the reduction of raindrop and wind erosion, and 2) creation of liveable environments for plants. When properly installed, erosion control blankets can retain moisture, control surface temperature fluctuations in the soil, conform to the terrain, and protect against vegetation burnout. With time, nettings and blankets will biodegrade and add mulch to the soil. Native vegetation will grow up through the blanket and actually anchor it to the soil.

Another product called erosion control matting, is used to reinforce root systems on sites where extreme disturbances have occurred. Matting is a lightweight, rigid product designed to replace concrete, asphalt or rip-rap systems. It encourages entrapment of eroded soils and provides for plant development. This product does not biodegrade like blankets or nettings. Once vegetation reclaims a site, the matting is hidden from view and quiely gives structural support to soil and vegetation.

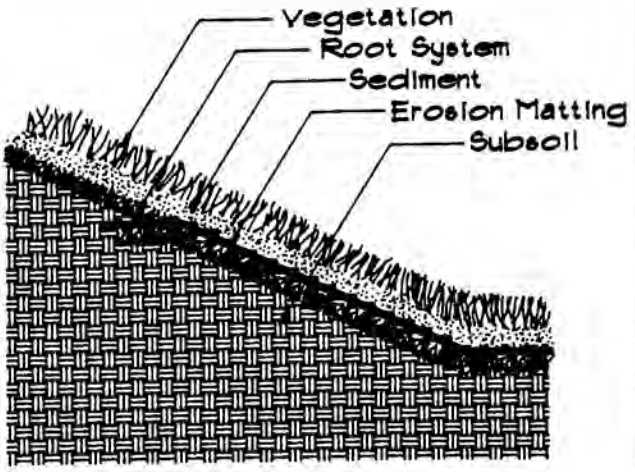


Shock Absorption

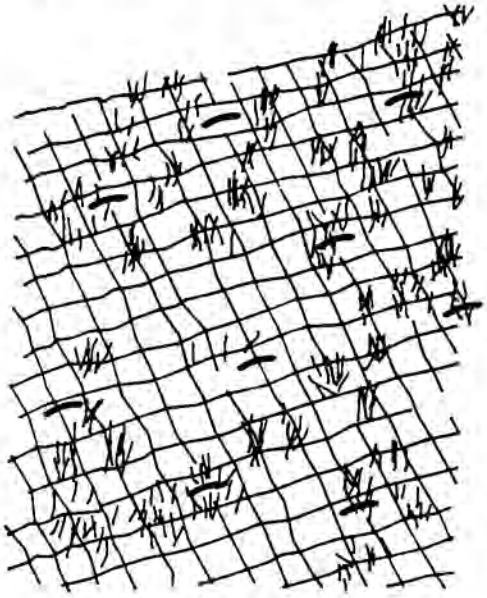


Vegetation Penetration

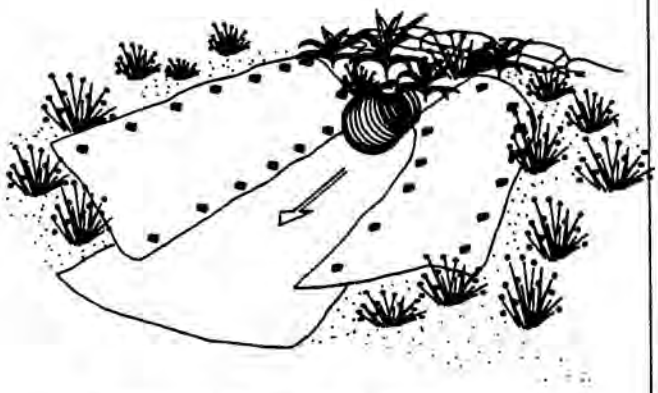
Erosion Control Blanket



Erosion Control Matting
for slopes



Erosion Control Netting



Erosion Control Matting
for stream channels

Figure B-7. Erosion Control Systems

Not all erosion problems are the alike, therefore the approach to soil stabilization cannot be limited to one or two solutions.

The Geomatrix Grid System is considered to be a permanent erosion control system once it is installed. The hexagon shaped grid system is made of a polyester fabric. It is rot-proof and extremely durable. The hexagon modules effectively hold onto granular materials such as the sand and gravels found on slopes in Dimple Dell Park.

Used in conjunction with vegetation and mulching applications, this system can be very effective in controlling extreme erosion problems.

Installation procedure

1. Level the slope surface by removing debris and filling in gullies.

2. Spread the geomatrix grid system across and down the slope anchoring the edges.

3. Fill the honeycombs of the system with native soils.

4. Either broadcast plant seed or hydromulch to revegetate and apply a mulch top dressing.

5. The timing of revegetation should be when natural moisture is most prevalent in the year.

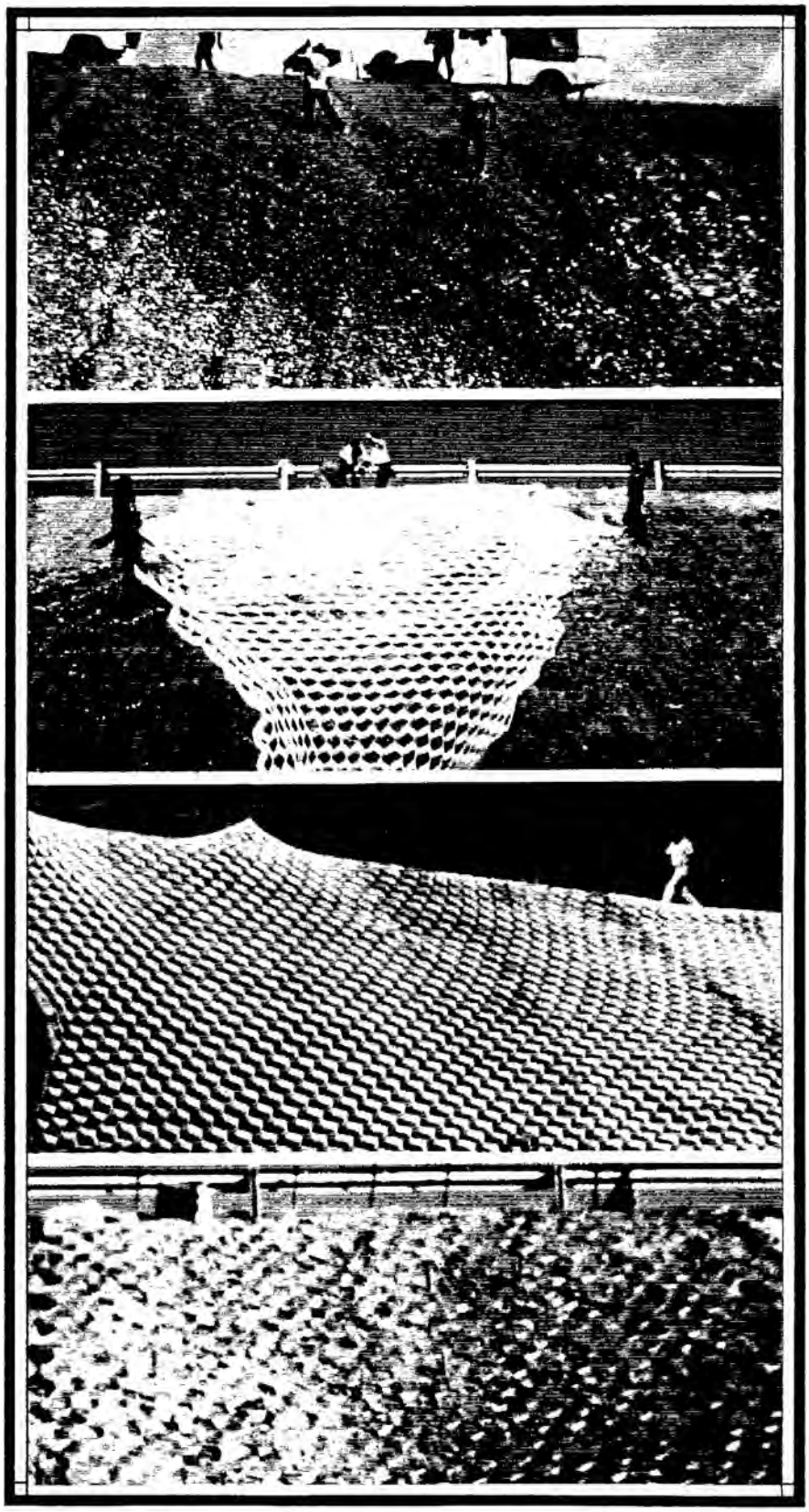


Figure B-8.

Geomatrix Grid System

Commonly used Land Restoration/Organic Mulches

TYPE	TEXTURE	FIRE HAZARD	LONGEVITY	COMPACTION RESISTANCE	WIND RESISTANCE
Bark:					
Chunks	Coarse	No	2 to 3 yrs.	E	E
Shreds	Coarse	No	2 to 3 yrs.	F	G
Compost	Medium	No	1 yr. or less	G	G
Grass Clippings	Fine	Yes	1 yr. or less	P	F
Leaves	Medium	Yes	1 to 2 years	P	P
Straw	Medium	Yes	1 to 2 years	E	P
Peat:					
Mountain	Fine	No	1 to 2 yrs.	F	G
Sphagnum	Medium	No	2 to 3 yrs.	F	G
Wood:					
Chips	Coarse	No	1 to 2 yrs.	E	E
Fibers	Coarse	No	1 to 2 yrs.	G	G
Shavings	Fine	No	1 yr.	G	G

Figure B-9. Mulching

Mulching around newly planted vegetation is recommended to be a short term practice. It should be placed at the base of the plant long enough to encourage establishment. As organic matter decomposes, carbon dioxide is released. In excessive concentrations, it has been linked to the decline of root growth and reduction in the roots ability to selectively absorb nutrients. Finer textured mulches add to increased amounts of carbon dioxide in the soil while larger particle size mulches or fiberous mulches, provide for higher oxygen levels and lower carbon dioxide concentrations. Mulches that decompose quickly, such as manures and grass clippings, provide the most nutrients to the soil.

Because mulches conserve soil moisture, roots undoubtedly respond, producing greater growth in areas where moisture is more consistenly available.

It is recommended that during fall transplanting, mulches not be applied to the base of the plant until the plant has partially defoliated following the first frost, but before the ground freezes.

Natural mulch accurs in areas of Dimple Dell Park where leaf and stem litter forms an organic layer beneath plant canopies. This natural process provides valuable organic nutrients to plants and moderates harsh environmental influences.

Mulching user trails and barren ground areas, has dramatically decreased the amount of sand and debris movement along the north rim of the park. Mulch has also helped prevent trails from widening and disturbing adjacent vegetation.

Mulches reduce both soil compaction and erosion cause by raindrop action. Moisture can penetrate into the soil easier because soils are not compacted and crusted. Mulches also reduce the evaporation of soil moisture. As evaporation occurs, water is drawn to the soil surface and lost to the air. A layer of mulch can act as a barrier to break up the flow of moisture from the soil to the air, making the soil-moisture profile more uniform and conducive for plant growth.

The physical structure of a mulch influences the amount of moisture conserved by the soil. Mulches that are coarser than the soil, reduce evaporation by slowing down the diffusion rate from the soil to the air. If the mulch is fine textured or compacted, air spaces in the mulch layer are smaller. This hastens the loss of soil capillary water. Generally, mulches with the lowest waterholding capacities, allow less soil moisture to escape through evaporation.

Mulches are also credited with keeping the soil warmer during cold weather and cooler during warm weather. Generally, mulches do insulate the soil, which moderates the day-to-night and season-to-season fluctuations. The buffering effects mulches have on soil temperature may be beneficial during the fall when soil temperature can be kept higher, longer into the season. With higher temperatures, root growth continues. When the soil remains unfrozen longer, above-ground stems have extended access to soil moisture, thus potentially averting winter damage caused by desiccation. The extent to which a mulch insulates soil for a longer period into the fall, is directly related to the conductivity of the mulch. Tightly compacted or densely structured mulches allow quicker heat loss than mulches of lower density.

Mulches also reduce the depth of frost penetration and the corresponding condition of heaving caused by alternative freezing and thawing. Roots, with their inherent decreased tolerance to low temperatures, can be protected from winter damage. The reduction or prevention of soil heaving also protects young transplanted seedlings.

Sandy soils can be mulched much deeper than heavy or wet soils. Maintenance is essential to the success of a mulching program, especially when used in combination with revegetation programs.

Figure B-10. Mulching

APPENDIX C

STREAM MITIGATION ALTERNATIVES

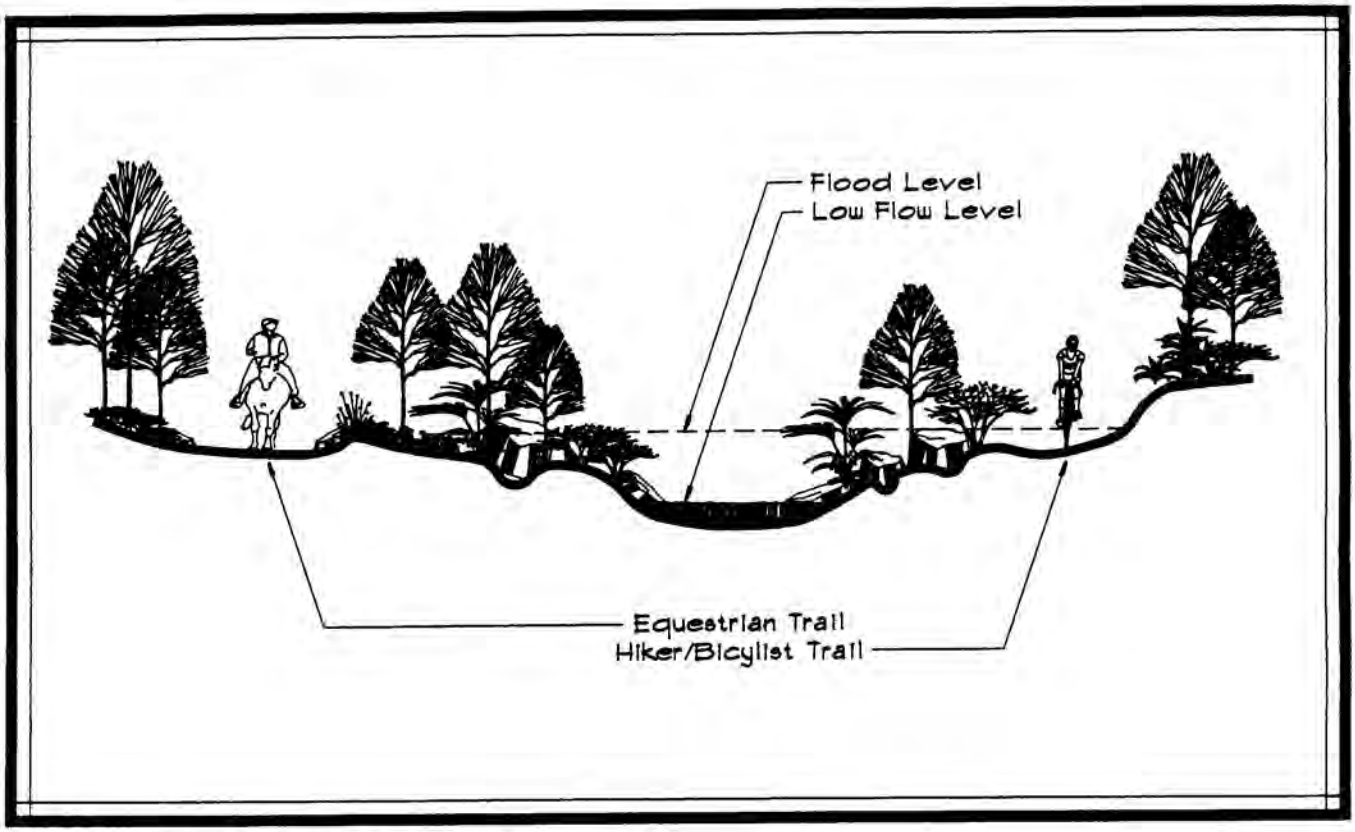


Figure C-1. Stream Corridor Section

In some sections of Dry Creek, the natural course has been modified for flood control. The most radical changes in the streams alignment have taken place in reaches of Dry Creek west of 1300 East. During the critical flood years of the early 1980's, a straight alignment was constructed with steep embankments and berms. Since that time, water hydraulic forces of the stream have attempted to reestablish a more natural balance. In areas, the water table has lowered, caused by the modified stream alignment. Riparian communities, especially large tree species, are declining as a result of the modified water table.

The following are management strategies for improving the Dry Creek Corridor.

Alternative 1:
Allow Dry Creek to establish and define its own natural balance and course. In time, a stable stream corridor will develop. Plant and encourage native riparian vegetation to armor and protect stream banks and flood zones. Encourage riparian vegetation that will not lower the water table. Discourage undesirable vegetation from growing within the stream corridor which tap into the water table and lower it

Alternative 2:
Consult with a river mechanics specialist to improve the streams ability to recharge the water table, handle critical flood events, and transport sedimentation. Seasonal ponds and oxbows, which are natural features of a stream, will require careful and sensitive design.

The current development objectives for Dimple Dell Regional Park are to preserve, protect and promote the natural environment, and to provide quality open space for interpretive experiences. Figure C-1 depicts a desirable section where nuisance flows and 5 year capacity flows could be handled in the low flow channel. The embankment between the low flow and upper flood levels, is armored with both riparian vegetation and rip rap. Trails for park users can be placed in the upper flood level zones.

Stream Corridor Section

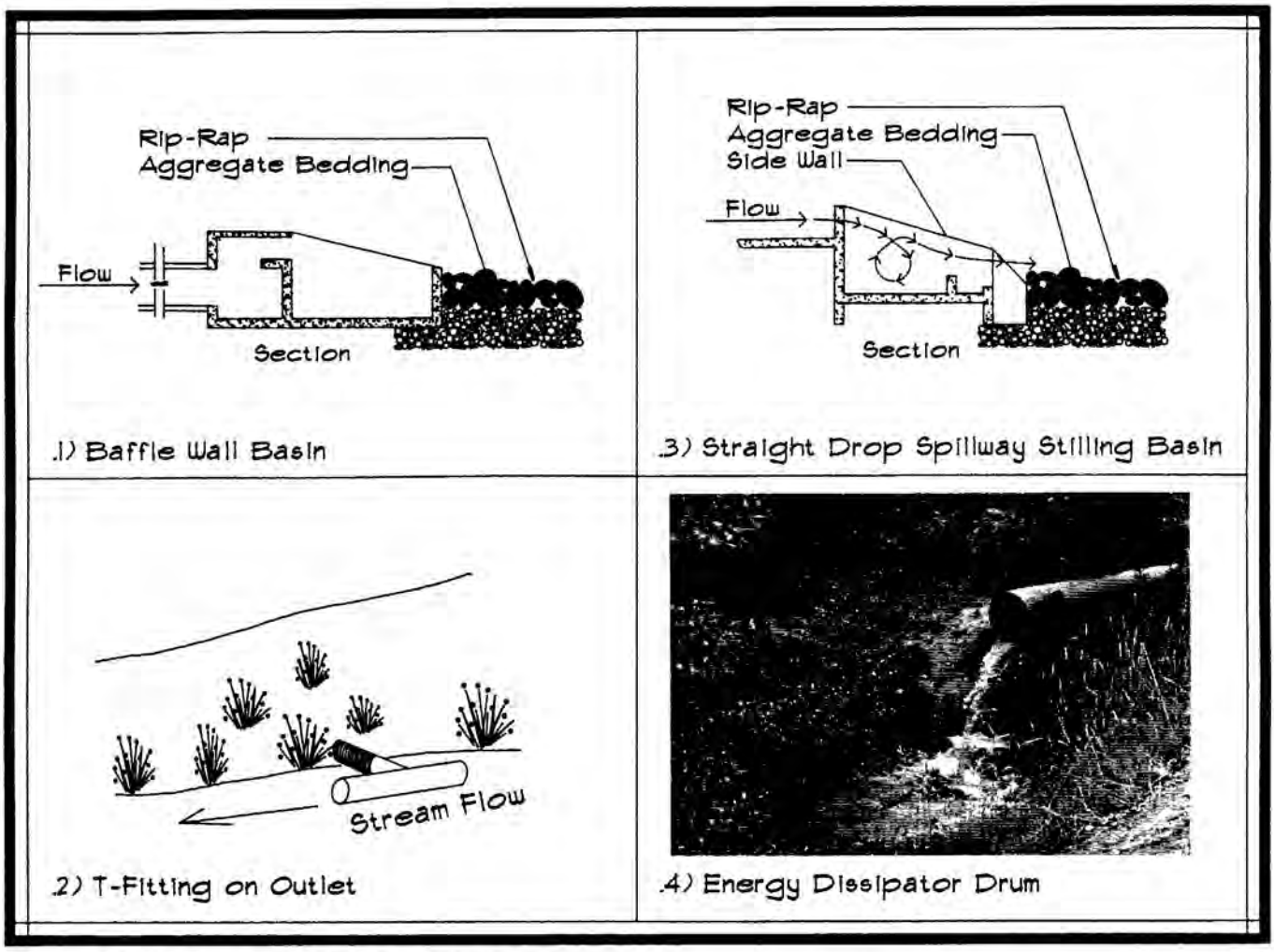


Figure C-2. Storm Drainage Outlets

The streams ability to transport sedimentation down Dry Creek is not a process that should be interrupted or modified. The erosion of steep slopes caused by the improper disposal of storm water drainage, is causing tremendous damage in the park. The unnecessary deposition of sediment into Dry Creek has imposed stream coarse changes and imbalances. Trees, shrubs and other vegetation have been buried in the massive depositions, causing life threatening damage to plant life.

To prevent scouring and soil erosion at storm water outlets, a transition structure is needed to dissipate the energy from storm water outflow. These structures are called Outlet Protection Devices or Energy Dissipation Structures.

The simplest and most effective type of energy dissipator is a rock lined apron at the end of a pipe or culvert. Riprap aprons can blend well with natural environments. Other types of energy dissipators, such as concrete impact structures can also be effective in stopping the massive erosion of soils.

Outlet protection devices are usually permanent structures. They require engineering to accomodate the generated velocity and volumes of water. The transition to the natural channel should be level with the receiving channel. Four outlet design alternatives for handling storm water drainage are shown above.

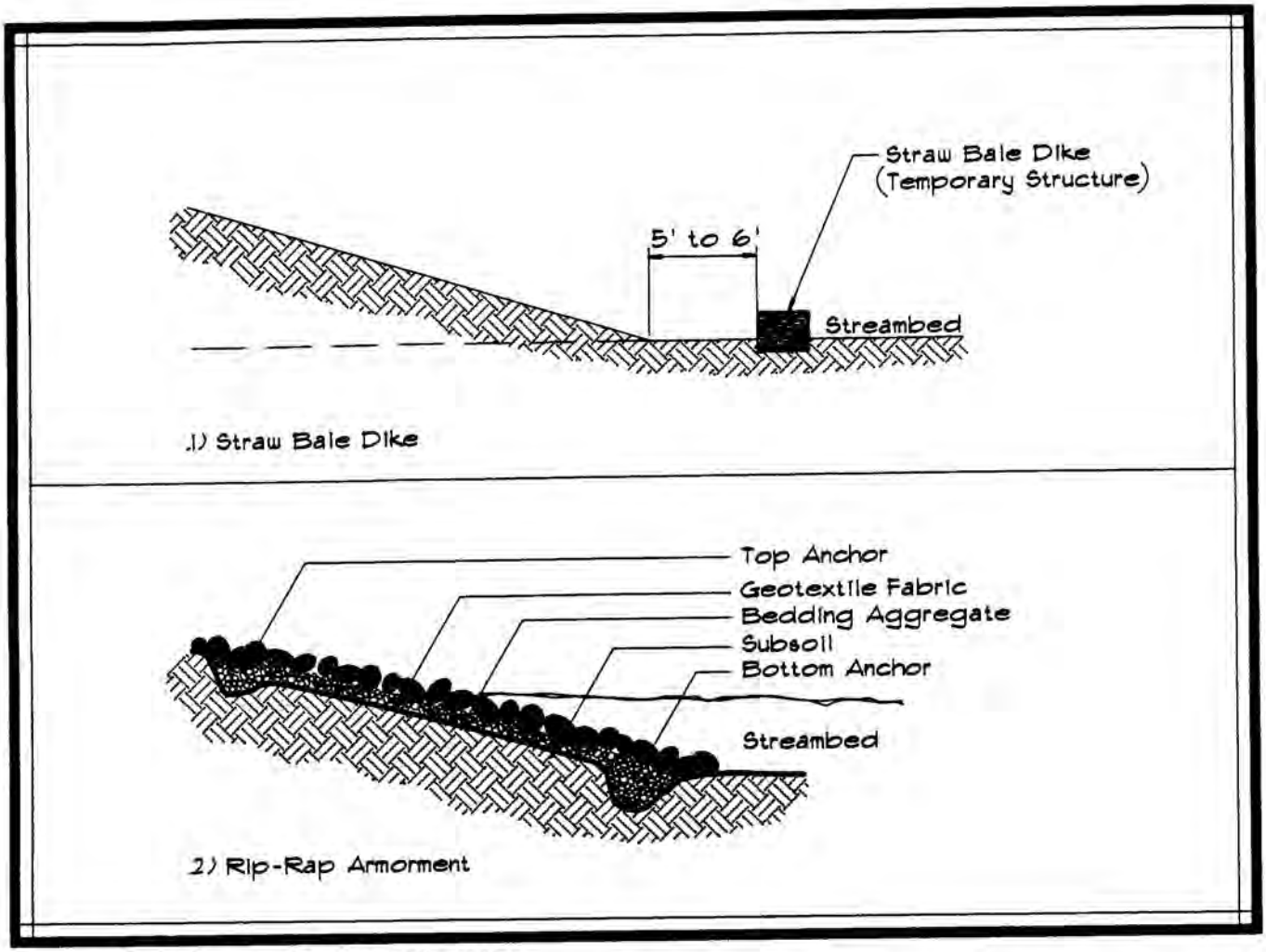
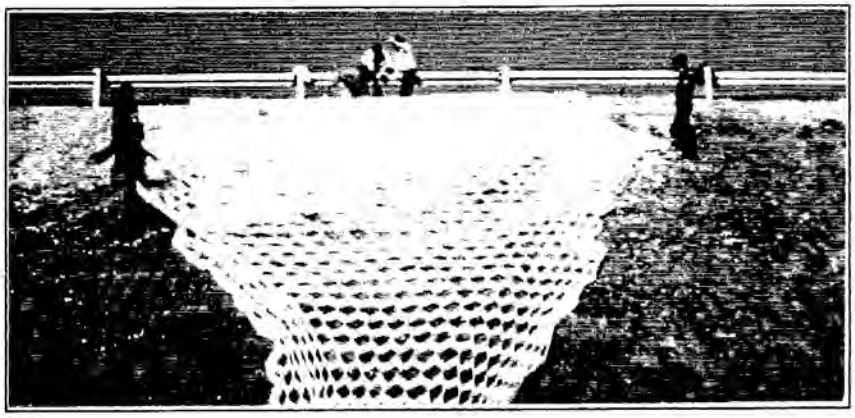


Figure C-3. Stream Bank Protection

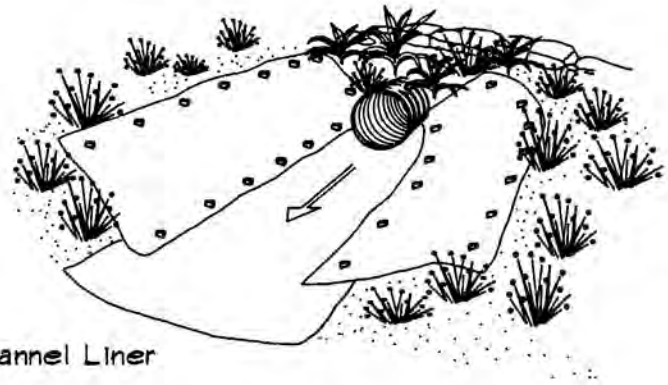
Figure C-3.1 demonstrates a temporary method of protecting a stream bank during normal flow event. This structure can be very effective in buffering the stream bank from the cutting action of the streams current. To install the straw bale dike, excavate a 6 inch deep trench the width of the bale and the length of the proposed barrier. The barrier should follow the contour of the streambed. Place the straw bale barrier 5 to 6 feet away from the stream bank if possible. This placement will provide a space for maintenance of the structure. Place bales in the trench with their ends tightly abutting. A tight fit is important in preventing sediment from escaping through the spaces between the bales. All bales must be either wire-bound or string-tied. Install bales so that bindings are oriented around the sides rather than along the tops and bottoms of the bales. If the binding is placed in contact with the soil, it will soon disintergrage and cause the bale structure to fall apart.

Figure C-3.2 demonstrates a permenant method of protecting the stream bank using Riprap material. Beneath the riprap material, a geotextile frabric layer is placed to provide additional protection to the stream bank. Place a layer of sand bedding on top of the fabric before placing the rock material. The bedding layer provides the following benefits:
1) protection of the geotextil fabric during the placement of the riprap
2) an intimate contact between the fabric and the underlying soil
3) ultraviolet protection
4) protection from vandalism

The bedding layer thickness is generally 3 to 6 inches in depth.



1) Geomatrix Grid System



2) Channel Liner

Figure C-4. Stream Bank Protection

The geomatrix grid system is well suited for most any type of erosion problem. It was designed to protect disturbed sites with barren ground. Portions of the Dry Creek stream bank which are less than a 1 : 1 slople are candidates for this erosion control treatment. Slopes greater than 1 : 1 are less likely to be stabilized by the use of this product.

Installation of the geomatrix grid system is relatively simple. Level the slope surface by removing debris and filling in gullies. Spread out the geomatrix grid system across and down the slope and anchor it at the edges. Fill the honeycombs of the system with native soils. Either broadcast seed and topdress with a light mulch or hydroseed to revegetate the slope. The timing of the revegetation should coincide when moisture is most prevalent in the year.

Flexible channel liners are advantageous to use in areas where the Dry Creek streambed has scour problems. In areas where discharging water is causing entering the creek, this material can provide stabilization to sandy soils and offer protection to surrounding vegetation. Channel liners are made from a variety of materials and are considered to be semi-permanent to permanent depending on the type of materials used.

APPENDIX D

VEGETATION MITIGATION ALTERNATIVES

The first necessary step in the revegetation process will be the collection of viable seed from locally adapted plant populations which will enhance the chances for successful revegetation.

Seed collection of adapted native species requires a knowledge of the phenolgy of plant development and the complex interactions with the environment. Seed maturity and production are highly variable from year to year, and collection must be opportunistic to take advantage of good seed production years for different species. Differences are attributed to variability in climatic conditions such as dates of snowmelt, timing and amount of precipitation, and ambient air and soil temperatures. Large differences can be expected among species in seed viability. Usually the grasses have lower and more variable seed viability than herbs or wildflowers.

Several years may be required to collect sufficient seed of all species desired for a given revegetation project. Typically, seeds mature on the plant in the late summer or fall and should be collected just prior to natural dispersal. Grass seeds can be hand-stripped from the inflorscence directly in the field, although clipping entire culms followed by thrashing is a more effective method. Seeds of most herbs and wildflowers will be more difficult to collect and clean because seeds are often enclosed within fruiting bodies that must be thrashed and separated following drying. The seeds need to be stored in dry porous containers such as paper or cloth bags and kept in a cool dry environment maintained near zero degrees celsius.

Successful revegetation of disturbed sites is determined to a large extent by how well revegetation techniques emulate natural conditions and modify limiting environments. Fall seed dispersal is the most advantageous season for seeds to be planted. Seeding late in the fall mimics natural seed dispersal and enhances seedling establishment on disturbed sites. Also, fall seeding exposes the seeds to cold dormancy over the winter and permits stratification for those species requiring it. (Chambers et al. 1988) Because fall timing of revegetation appears to be critical, seed collection, seeding and planting may not always be possible in the same year if seed collection and planting times overlap.

It is always desirable to determine the viability of the seed lot. This permits calculation of seeding rates based upon seed viability of individual species, which ensures that success or failure of individual species will not be attributed to the wrong cause when low seed viability is the problem. Because production of mature and viable seed varies not only among years but also among species within any given year, seed collection must be opportunistic to take advantage of good seed production years for different species. It may be necessary to harvest seeds one to several years before reclaimation of a disturbed site to obtain an adequate supply of the desired species. If seeds are harvested in advance, careful monitoring of storage conditions is required, as well as longevity of seeds in storage. Moisture content of the seeds and storage temperature are important determinants of how long seeds can be left in storage.

Seed mixtures that include native grasses, herbs and wildflowers should be broadcast over disturbed sites in mid to late November. Volunteers can assist in the seed operation (seedbed preparation, seeding, and seed coverage). Disturbed sites fall into two categories: 1) areas that have been kept free of vegetation because of trampling or drifting sand, and 2) areas where the native vegetation has been removed and has been replaced by competitive annual grasses or forbs.

Figure D-1. Seed Collection

Seeds that are deposited on exposed soils in windy conditions, are often transported over the soil surface by the wind until they encounter a barrier or depression that traps them. Several soil properties, including roughness, soil partical size and the presence or absence of vegetation or organic matter affect the ability of the soil to trap seeds. Seeds tend to move farthest on smooth soils and tend to remain in position, trapped in crevices in rough soils. Seed morphological attributes important for incorporation of seeds into the soil include small seed size and a lack of appendages or large hairs. Specialized appendages on seeds, such as hygroscopic awns or hairs, can facilitate seed burial. The migration of sandy soil by the wind and the action of natural precipitation on the soil, can also bury seeds.

Figure D-2. Natural Seed Entrapment

Several options are available for treatment of areas where native vegetation has been removed following a disturbance and non-native annuals dominate the site. The fine fuels provided by these annuals increases the fire frequency in an area. An increase in fire frequency is a concern for adjacent property owners, and can also have an adverse long-term affect on native plant communities. Two native perennial grasses that can be found growing on disturbed sites are Indian Rice Grass and Sand Dropseed. These and other species would be expected to increase and dominate disturbed sites if the annual grass seed reserves in the soil could be depleted. Although, mowers could be used to cut the annual rye grass prior to seed set, a more practical approach may be to broadcast a pre-emergent herbicide on the affected sites. No pre-emergent herbicide is currently registered for rangeland use, but there are several that could be used on an experimental basis. Steve Dewey, a weed specialist at Utah State University, has expressed an interest in a research project that would evaluate the effectiveness of a herbicide treatment. If the research project could be conducted in Dimple Dell Park, it may be possible to develop in more detail, management for controlling annual grasses and encourage the spread of native perennials. In the meantime, these areas should be protected from further disturbance, and treated mechanically.

There are two alternative treatments for disturbed sites where annual grasses dominate. The area can be sprayed with a herbicide called "Round Up" in the spring, prior to seed set, and then seeded with selected perennial grasses and wildflowers. The herbicide kills the annual plant, but the stalk remains throughout the summer to hold the soil in place. Selective seed can be broadcast into a prepared seedbed (see seedbed preparation section). Disturbed sites with annual grass coverage, can be mowed with equipment, drilled with a native seed drill, or wire whipped by hand to remove seedstalks prior to seed set. The treatment may have to be repeated if subsequent moisture promotes the development of new seedstalks.

Plant species that are native to the Dry Creek drainage, are recommended for revegetation of disturbed sites. Seed can be collected from existing vegetation stands. If sufficient amounts of seed are not available from existing stands, seed purchases should be made from local suppliers. Purchased seed shall be collected from sites similar to the Dry Creek drainage.

Figure D-3. Undesirable Vegetation.

Natural Seed Entrapment
Undesirable Vegetation

In most areas, surface mulching with straw or wood chips is essential following revegetation. Mulch should be scattered so that some bare ground is exposed. A scattered mulch will allow for the establishment of additional seeds from adjacent native stands. A surface mulch tends to minimize the redistribution of seed and soil fines by the wind, reduces the incidence of frost, and minimizes evaporation at the soil surface. Light mulching of the soil surface is also important for seeds that require sun light.

Organic mulches can prevent surface wind erosion of both soil and seeds. In some cases, mulch will trap wind-blown seeds and soils. In areas where wind transports large amounts of sand, the addition of a temporary jute mesh netting placed over the top of the prepared seedbed can greatly reduce sand migration patterns. Once seedlings become established and can sufficiently reduce soil erosion on their own, the jute mesh can be removed. Placement of a mulch should not totally obstruct the movement of sand. Allowing for sufficient soil movement is necessary to cover seeds planted near the surface for germination in the spring.

Figure D-4. Mulching

Using seeding rates based on the number of viable seeds per unit area for each species, rather than weight per unit area, allows seedling rates to be determined on an individual species seed viability basis. This method insures that potential competition among species will be uniform over the area, provides optimum opportunity for survival of seedlings, and permits success or failure of each species in the mixture to be correctly assessed. The amount of seed applied for each species in a mixture may need to be adjusted for seed lots collected from different locations and times because seed viability varies widely from year to year.

Knowledge of seed germination requirements of species is essential in determining seeding methods and techniques. Many species have small seeds that cannot emerge from the soil if they are planted too deeply, whereas species with larger seeds may require deep planting to avoid desication during dormancy and seedling development. Also, some species must be planted at or near the soil surface because they require light during germination.

Figure D-5. Seed Mixtures

Seedbed preparation for areas that lack vegetative cover can be accomplished by raking the surface when there is sufficient soil moisture to create shallow furrows in the sand. A variety of seeding depths will be made naturally with this method. This should accomodate for the different seeding depth requirements of the various species. As soon as the seedbed is prepared, the seed mix should be broadcast over the area. The quantity needed for the project will be determined beforehand, and workers can use hand held broadcast seeders to cover the area with all that is allocated for a particular project.

Figure D-6. Seedbed Preparation

Mulching
Seed Mixtures
Seedbed Preparation

A direct, statisical measure and evaluation of the production and coverage of seeded species will provide direction for seed mixture rates and seeding techinque modifications. Documentation in the form of photographs and notes, will provide the basic information for ciritcal analysis of the successional progress of native plants.

Figure D-7. Evaluation

Seed germination of wildflower and herb species is generally greater under light rather than dark conditions and following wet cold storage. Grass species have fewer specific germination requirements than wildflower or herb species. Wet cold storage increases the rate of germination for grasses, wildflowers and herbs.

The fact that light enhances seed germination for the majority of wildflower and herb species, indicates that these species should be sown close to the soil surface. The less specific germination requirements of the grasses indicates that adequate field germination could be obtained either by sowing close to the soil surface or shall drilling. The increase in the rate of seed germination of all species following wet cold storage indicates that natural stratification can decrease the number of days required for germination and, consequently, can increase the likelihood of plant establishment. Autumn seeding maximizes the opportunity for natural stratification to occur.

Figure D-8. Seed Germination

Only plant species known to be found in and native to the Dry Creek drainage should be used in a revegetation program. Observations of natural plant colonization inside the park, provides evidence of species that are well adapted to the natural conditions. Data sheet (D-14) lists the plant species which are native to the Dry Creek drainage and are suitable for revegetation programs.

Figure D-9. Plant Species Selection

The revegetator influences species establishment and growth in several ways. Obviously, the species used in the revegetation program must be adapted to the environmental conditions that exist on the site. Also, the revegetation methods that are used must be appropriate for the species that one wants to establish. Among the most important considerations are, seedbed preparation and seeding methods. Some species are believed to be difficult to establish soley because improper revegetation techniques are used. For example, small seeds must be sown close to the surface, because they have limited nutrient reserves and frequently cannot emerge from great depths. Many wildflower and herb species require light to germinate and must also be sown close to the soil surface. The climatic regime of the Great Basin has special implications for seedling establishment. (In areas characterized by low precipitation, some irrigation during the first and possibly second years after seeding may be essential for successful seedling establishment). Because many disturbed sites are characterized by high wind abuse, surface stabilization after seeding with mulch is often necessary to hold soil and seed in place.

A plant species competitive abilities must be considered when developing seed mixtures and seeding methods. Species typical of early successional sites and many introduced or cultivated species have higher growth rates and greater nutrient uptake rates than native species that are adapted to lower-nutrient soils.

Figure D-10. Species Establishment, Growth and Competition

Evaluation
Seed Germination
Plant Species Selection
Species Establishment, Growth and Competition

The most time consuming task of rehabilitating vegetation disturbances inside the park will be the collection of native plant seed. The rehabilitation plan for disturbed sites should include the development of an on-site nursery or facility for raising seedlings and plants of native species under the same environmental conditions of the site.

A suitable nursery site could be established in conjunction with the planned Nature Interpretive Center which will incorporate a xeriscape theme around the visitors center and parking areas.

Figure D-11. On-Site Nursery

An inventory of bitterbrush seedlings planted in the fall of 1991 by volunteers, indicates that a majority of the seedlings are surviving and growing. A comparison between live plants and dead plants, showed that live plants were initially burried deeper and protected better by sandy soils. As volunteers planted the bitterbrush, they formed a bowl around the plant to collect moisture. During a years time, most of the bowls were covered over with blowing sand which actually provided protection and more favorable growing conditions for the surviving plants.

Planting bitterbrush seedlings along trail edges will help establish limits for trail systems by preventing trails from widening.

Figure D-12. 1991 Bitterbrush Evaluation

The patchy distribution of wood chip mulch created favorable microsites for seedlings planted in the fall of 1991. Mulch, even if it is unevenly dispersed, significantly ameliorates the harmful effects of wind, rain and temperature, by acting as a buffer. Mulch can improve the physiological status of plants by decreasing transporation. Mulch can also buffer the effects of the wind by decreasing soil movement and , consequently, decreasing plant abrasion and root exposure.

Figure D-13. Aquaduct Disturbance Evaluation

On-Site Nursery
1991 Bitterbrush Evaluation
Aquaduct Disturbance Evaluation

This list of plant species represents native vegetation found in and adapted to the environment of the Dry Creek drainage. These species also respond well to revegetation.

TREES

Box Elder, Acer negundo
Gamble Oak, Quercus gambelii
Peach Leafwillow, Salix amygdaloides
Narrowleaf Cottonwood, Populus angustifolia
Red River Birch, Betula occidentalis
Chokecherry, Prunus virginiana, var. melanocarpa
River Hawthorn, Crataegus rivularis

SHRUBS

Fragrant Sumac (Squawbush), Rhus aromatica, var. Trilovata
Golden Current, Ribes aureum
Big Sagebrush, Artemisia tridentata
Antelope Bitterbrush, Purshia tridentata
Mountain Mahogany, Cercocarpus montanus
Red Osier Dogwood, Cornus stolonifera
Sandbar Willow, Salix exigua
Woods Rose, Rosa woodsii
Fourwing Saltbush, Atriplex canescens
Creeping Oregon Grape, Mahonia repens
Rubber Rabbit Brush, Chrysothamnus nauseosus
Twisted Leaf Rabbit Brush, Chrysothamnus viscidiflorus

GRAMINOIDS - FORBS - WILDFLOWERS

Baltic Rush, Juncus balticus
Western Wheatgrass, Agropyron smithii
Bluebunch Wheatgrass, Agropyron spicatum
Indian Ricegrass, Oryzopsis hymenoides
Needle-and-thread, Stipa comata
Sand Dropseed, Sporobolus cryptandrus
Cat's Eye, Cryptantha sp.
Nelson's Larkspur, Delphinium nelsonii
Utah Locoweed, Astragalus utahensis
Longleaf Phlox, Phlox longifolia
Daisey Fleabane, Erigeron divergens
Wild Onion, Allium acuminatum
Fragile Prickly Pear, Opuntia fragilis
Sego Lily, Calochortus nuttallii
Death Camus, Zygadenus paniculatus
Bedstraw, Gallum aparine
Sand Verbena, Abronia fragrans
Scarlet Gilia, Gilia aggregata
Pale Evening Primrose, Oenothera pallida
Hairy Goldenaster, Heterotheca villosa
Yarrow, Achillea millefolium, var. Anulosa

Figure D-14.

APPENDIX E

LANDFILL CLOSURE AND COVERAGE

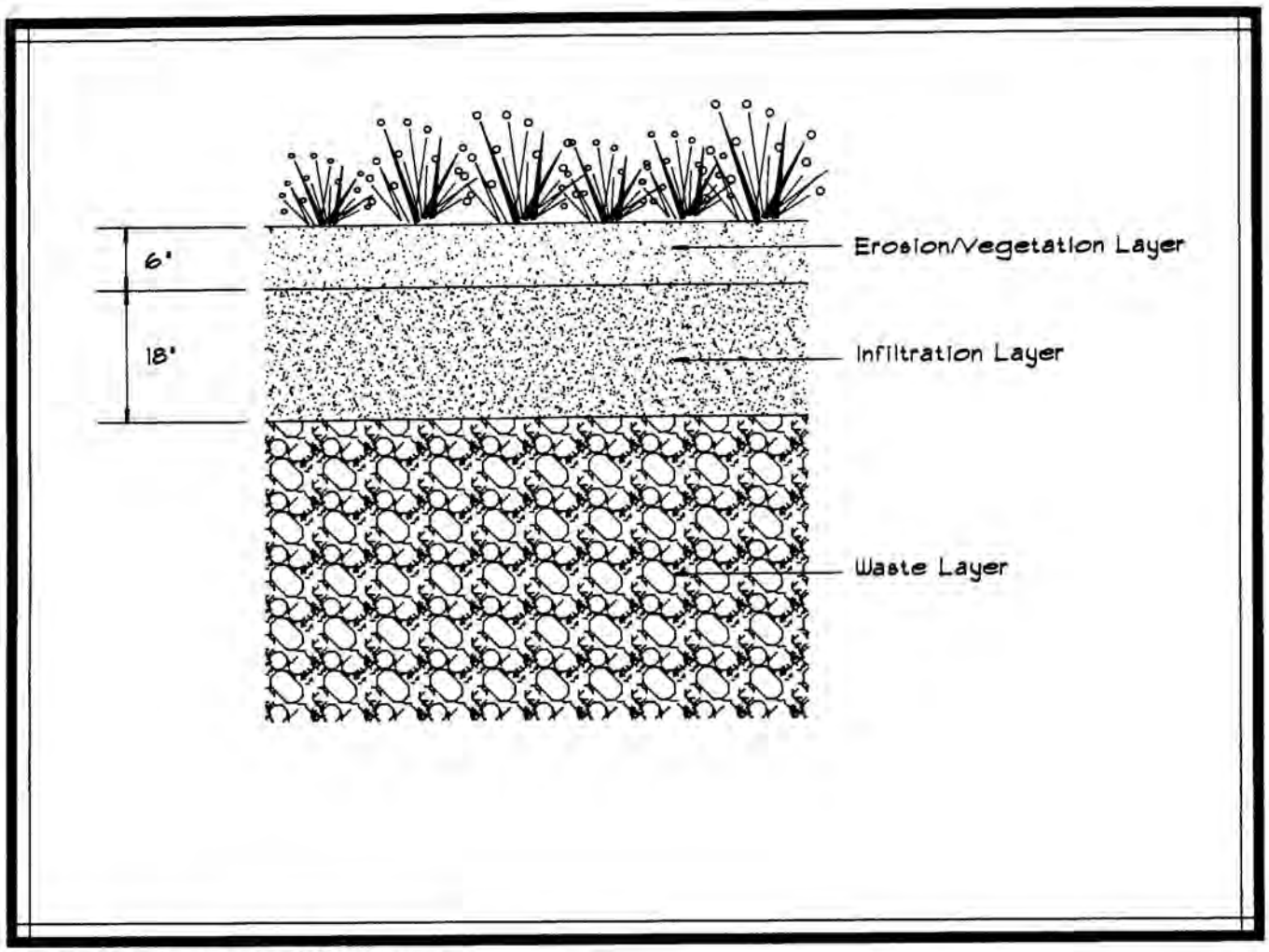


Figure E-1. Closure and Coverage

The new landfill closure rule stipulates that landfills must develop a closure plan and install a final cover that minimizes both erosion and infiltration of liquids into the landfill. The cover must consist of an erosion/vegetation layer that is a minimum of 6 inches thick and capable of sustaining plant growth. In addition, it must have an infiltration layer that is a minimum of 18 inches thick and has a permeability less than or equal to that of the bottom liner system or natural subsoils present.

Post-closure care of the landfill must be conducted for 30 years, including maintaining the final cover, monitoring groundwater, landfill gases, and managing leachate.

APPENDIX F

PARK DEVELOPMENT DETAILS

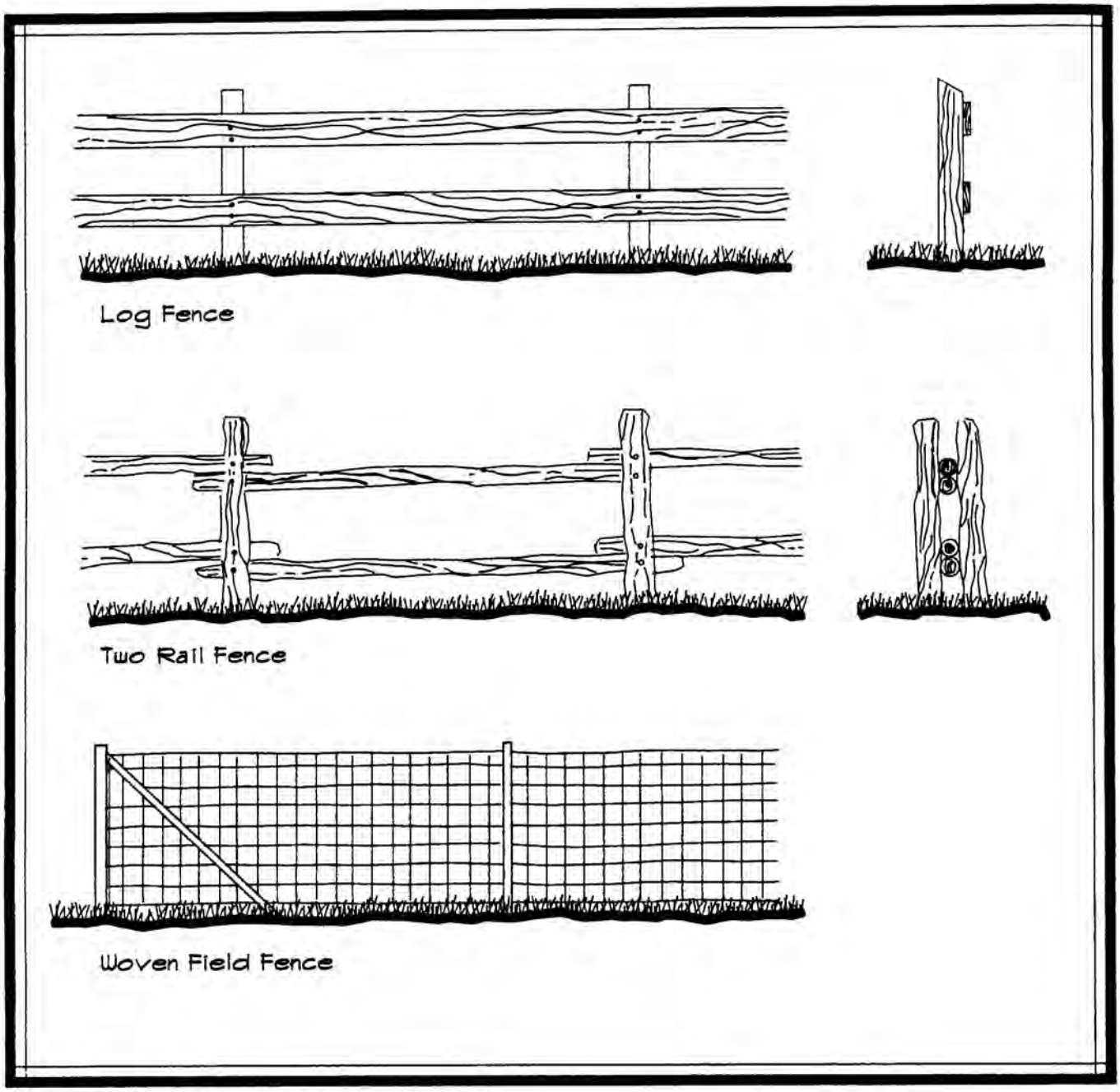


Figure F-1. Fencing

Park fencing will play an important role in restoring and revegetating disturbed sections of the park. The presence of a sturdy fence establishes control of indiscriminate access into the park as well as providing definite park boundries. Fencing will perform two important functions: 1) a boundary for temporary area closures for revegetation and reclaimation projects, and 2) a permenant boundary for long-term control from outside problems.

Temporary fencing alternatives can range from wire mesh fencing hung on metal T-posts to mesh fencing fabric hung on posts. Permanent fencing alternatives which would be in harmony with the nature of the park range from lodge pole, split rail, vinyl clad chainlink, native rock, or treated lumber. Permanent fencing alternatives for screening purposes would require materials like cedar or redwood.

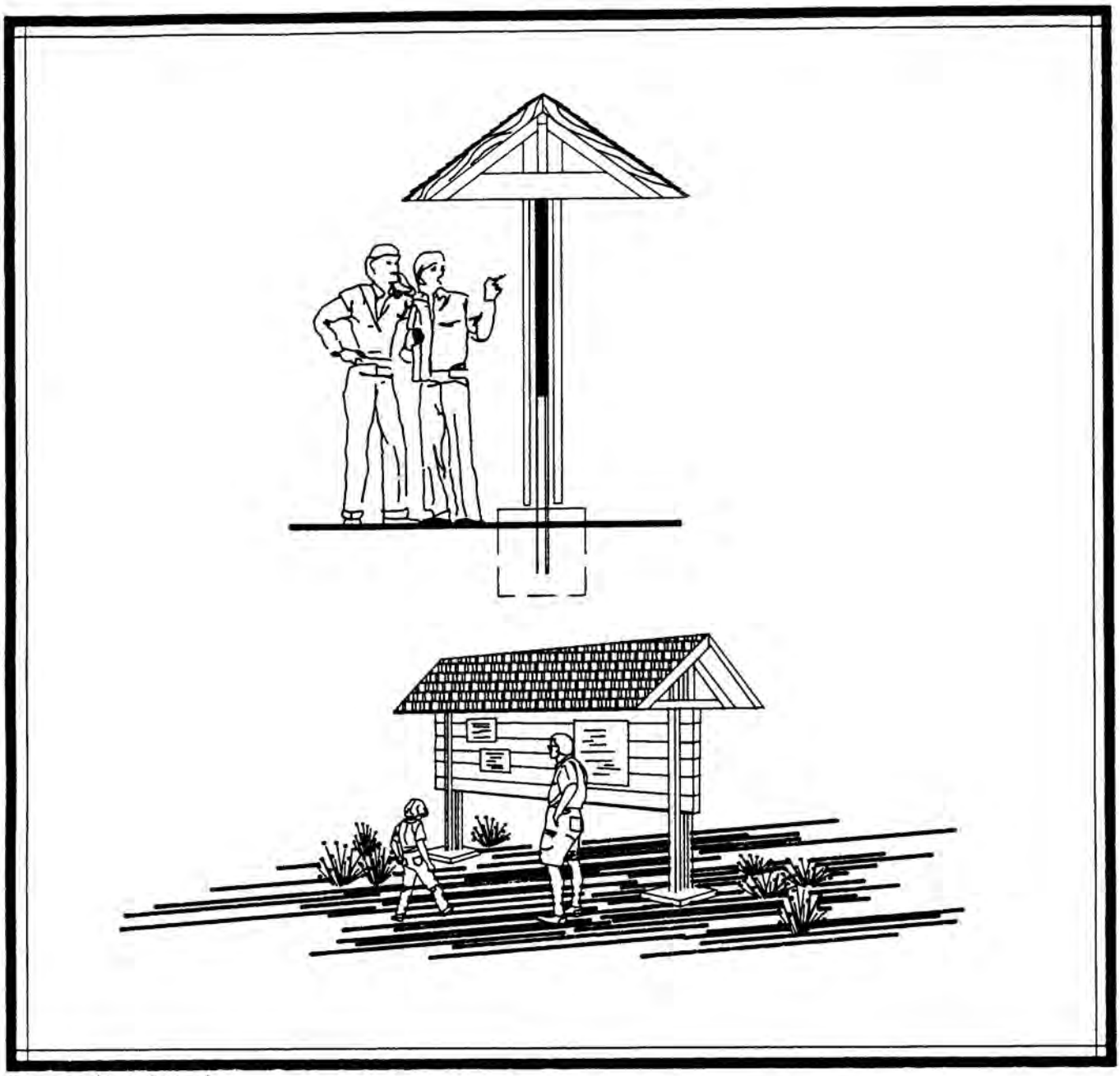
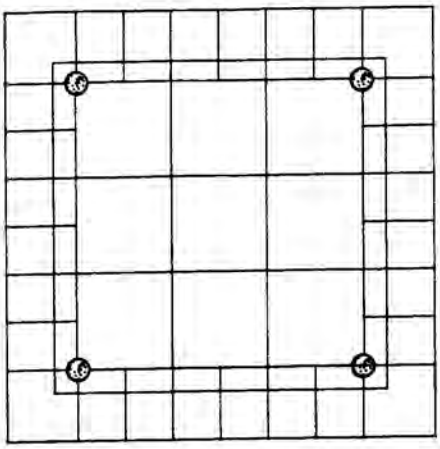


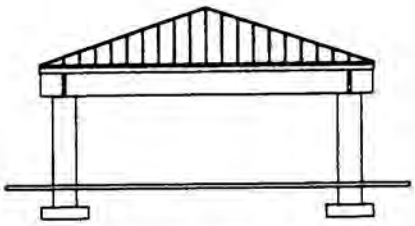
Figure F-2. Kiosk

Signage at trail head locations can help educate users to the proper use of trail systems, awareness of sensitive environment areas, park regulations, park programs and events. Kiosk structures are commonly recognized and are used in park environments as sources of information. A standard architectural theme for kiosks should be adopted and coordinated with other structures in the park.

A roof structure over the information board provides protection from inclement weather and direct sun. Construction materials should be durable and vandal resistent. Maintenance personnel should have an annual schedule of water proofing and repairing wood members of the kiosk.



Paving / Floor Plan



Shelter Elevation

Figure F-3 Neighborhood Picnic Shelter
Group Picnic Shelter

Picnic shelters large enough to accommodate six to ten tables and permanent barbeque grills, are planned for development in three areas in the park. Siting of the structures should be considered where minimal grading will be required, usage can be monitored, parking is within 200 feet, and where minimal disturbance to the environment would take place.

The architectural style of the picnic shelters should harmonize with other structures in the park. Annual maintenance to repair normal use and damage will be required to keep the structure in safe useable condition.

Picnic Pavillion

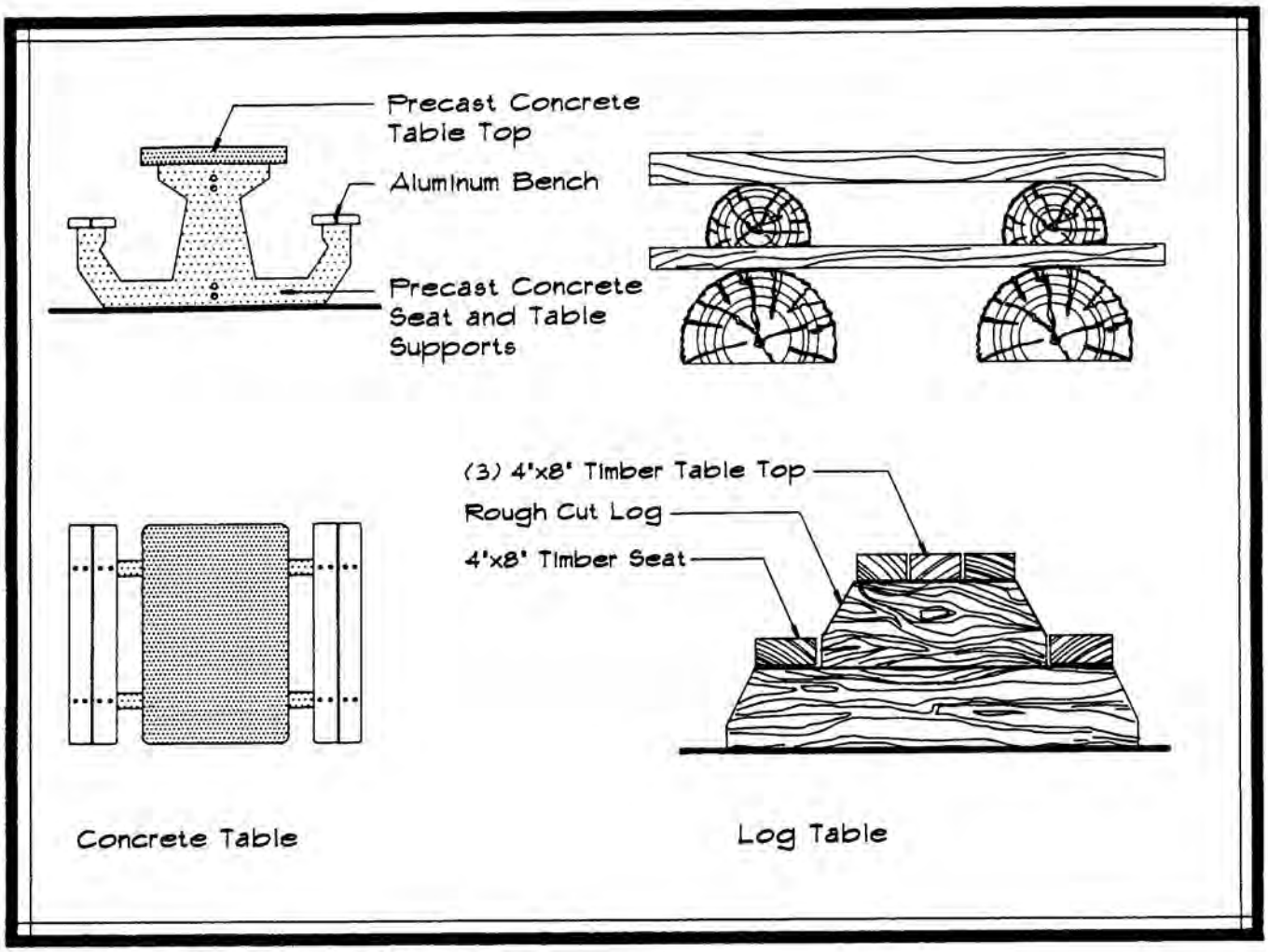


Figure F-4. Remote Picnic Structure

Picnic tables should be durable and made of long lasting materials to withstand normal use, as well as vandalism and abuse.

Prime locations for picnic tables would be areas: 1) adjacent to trails, 2) with flat topography, 3) that offer scenic views, and 4) accessible for maintanence.

Avoid locating picnic tables: 1) where vandalism has been a problem, 2) in areas difficult to access, and 3) in sensitive wildlife and plant environments.

Tables constructed of heavy timbers or concrete, have proven to be extremely durable. Maintain the picnic equipment annually by water proofing and repairing the structures.

Remote Picnic Structures

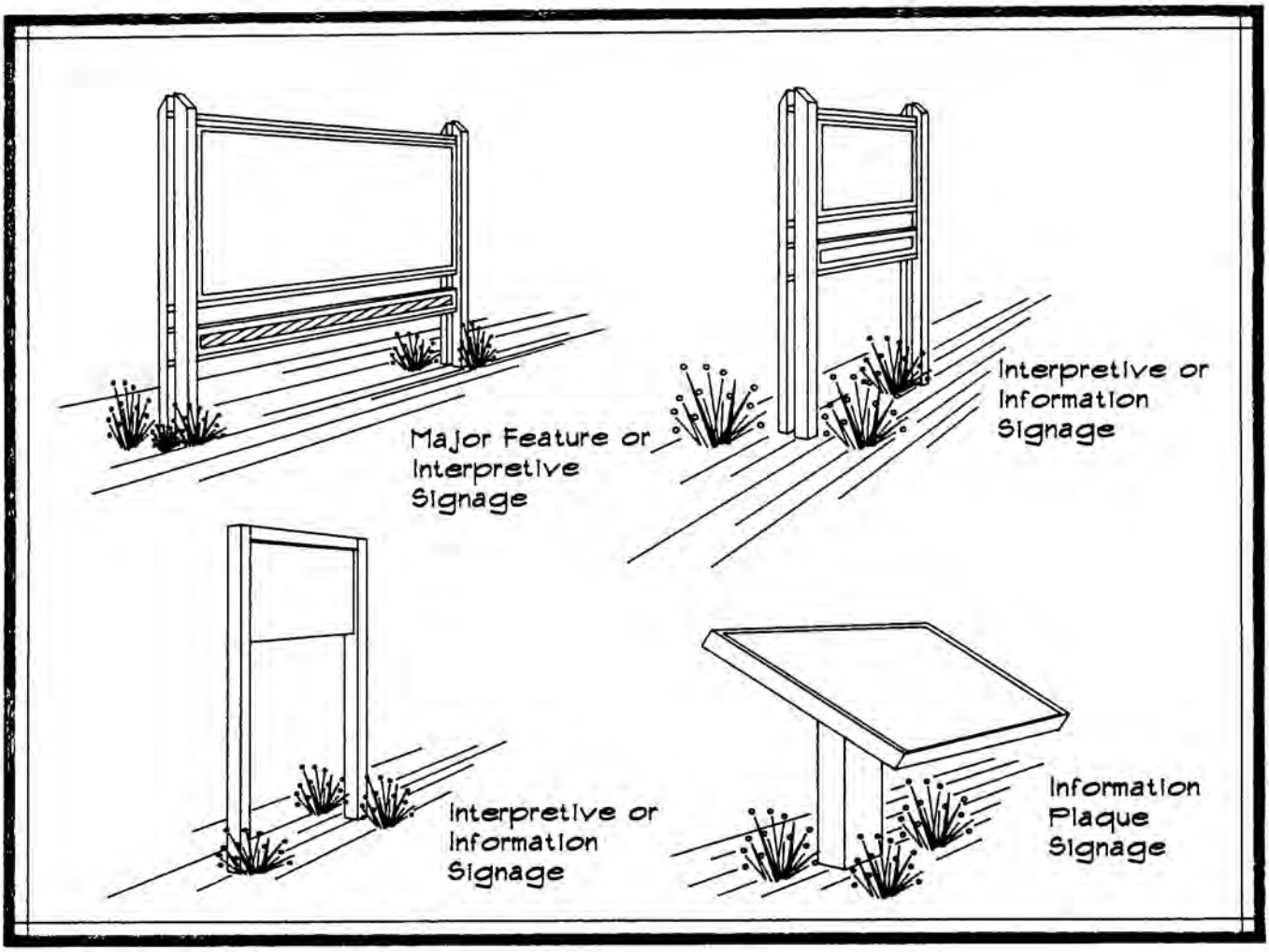


Figure F-5. Park Signage Types

Building Signage

Major park features such as the nature center and caretakers office, should have identification signs located at their entrances. Thees signs should inform park users of available open hours, current and upcoming activities or programs, and provide park users with park rules and regulations.

Warning Signs

Warning signs inform users of potential hazards while they are recreating in the park. The purpose of this type of sign is to promote safety. The location of warning signs should be strategically placed where potential problems or accidents could occur.

Interpretive Signs / Wayside Exhibits

Interpretive and exhibit signs should be part of the Nature Centers educational programs. Signage information will most likely be in the form of graphics with narrative descriptions. This information can be placed on either plaques, markers, exhibit panels or demonstration display boards, depending on how much space is required. The signs should be professionally designed and manufactured to be long lasting and durable.

User Activity Signs

Graphic symbols commonly recognized, which represent programs, services or prohibited uses, can provide immediate information to park users.

Park Signage Types

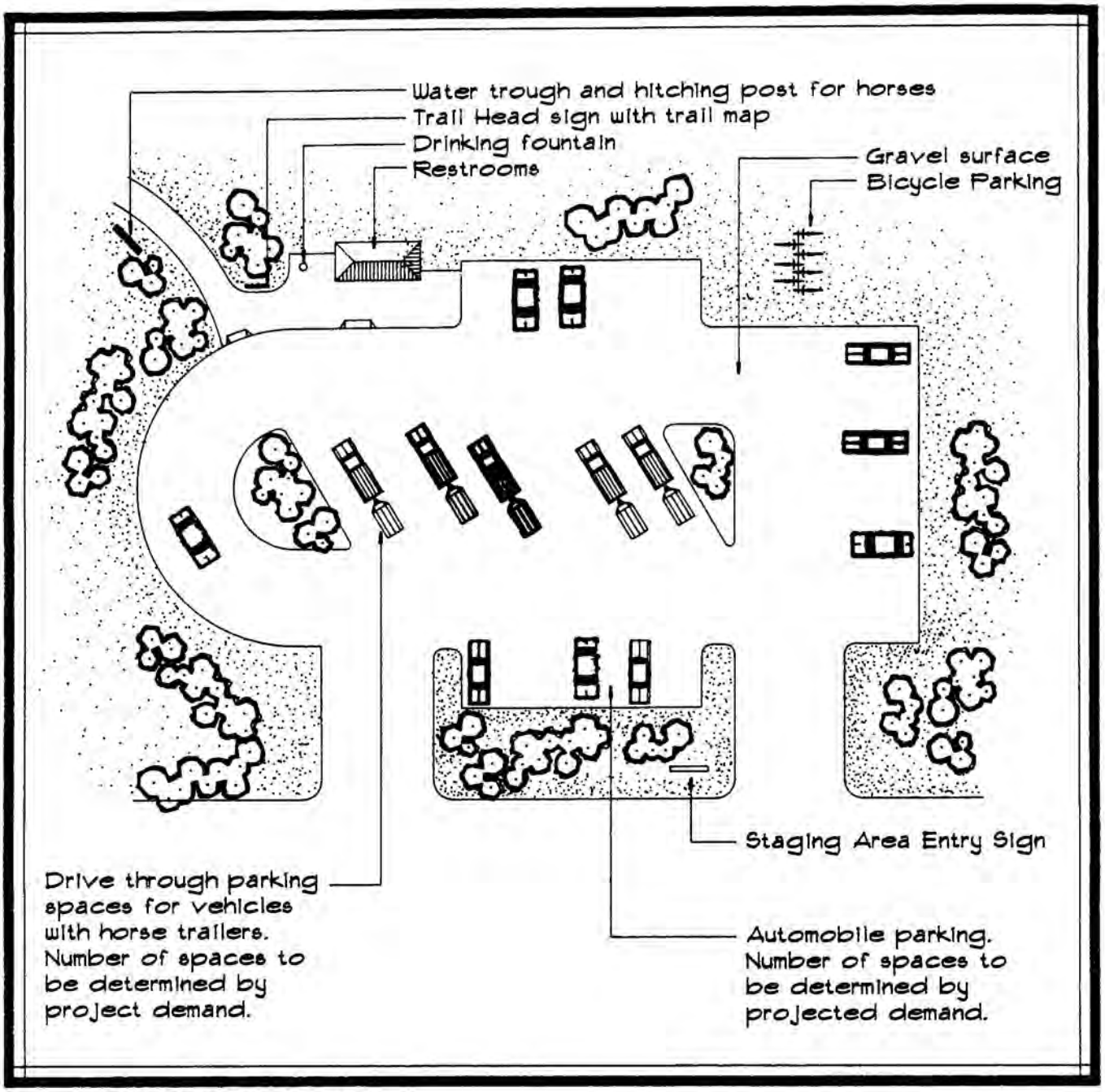


Figure F-6. Trail Staging Area

Staging areas are designed to provide parking and preparation facilities for park users. Staging areas also provide services like restrooms, bicycle parking, a drinking fountain, a hitching post for horses and a map of the trail systems.

The number of parking spaces for both cars and equestrian vehicles, should be determined by the projected demand for the various trail uses.

Restrooms located at staging areas can be portable self-contained toilets or flush toilets with with running water.

Trail Staging Area

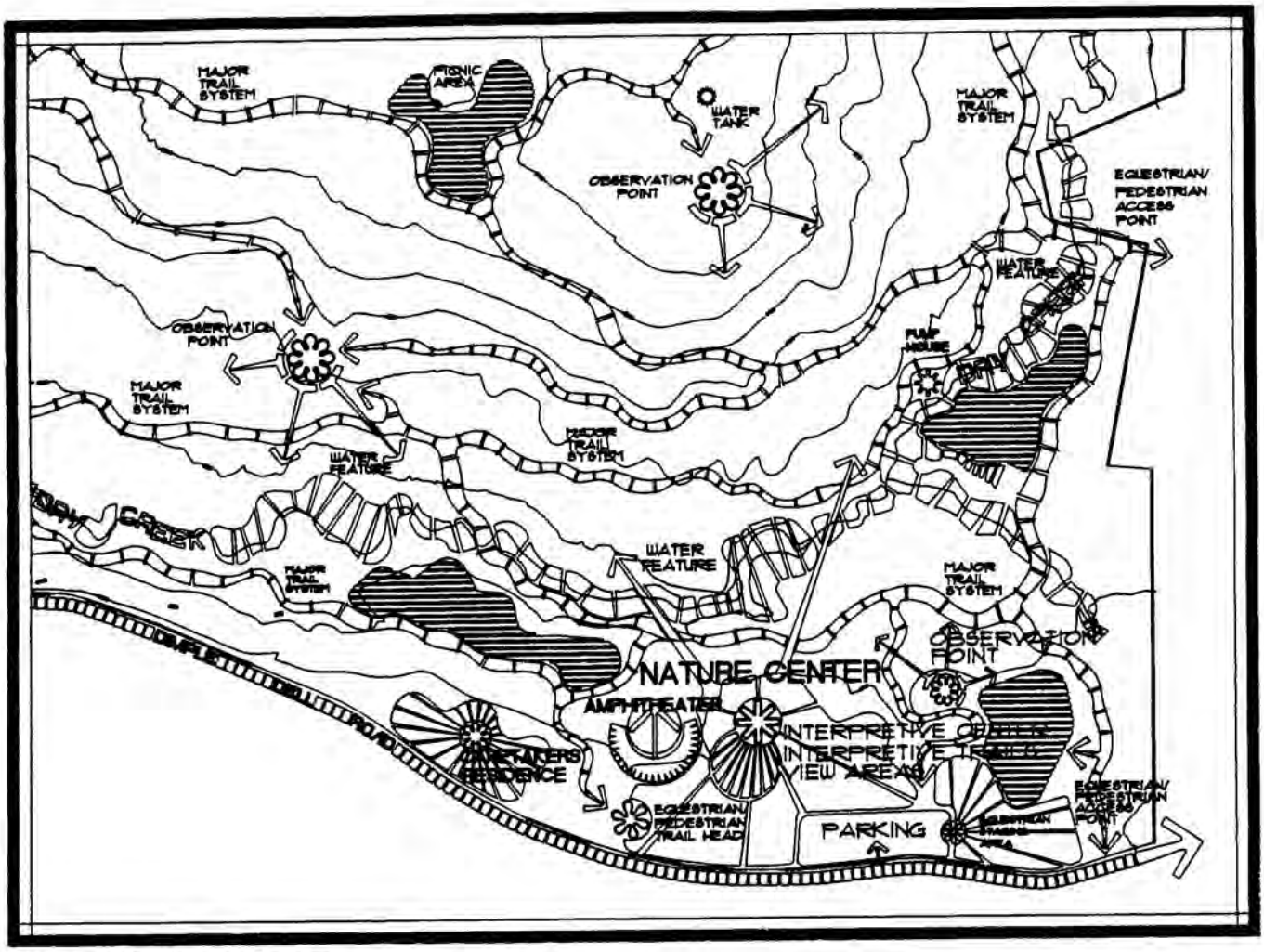


Figure F-7. Nature Center

The dominate feature of Dimple Dell Regional Park will be the Nature Interpretive Center. Features that will radiate from this center will be: 1) the amphitheater, 2) parking lot, 3) trail heads for equestrian and pedestrian users, 4) interpretive trail systems, 5) water features, 6) handicap access ramps and platforms, 7) restrooms, 8) day use areas for picnicing and 9) signage.

Programs which the Nature Center will offer Salt Lake County residences will be: 1) Wildlife and Native Plant education, 2) mineral and geologic formations of Dry Creek, and 3) archeological and historical background of Dimple Dell.

These programs can be best administered when a Nature Center is developed to facilitate school field trips, general public classes, guest lecture series, interpretive tours, pre-school classes, Jr. naturalist activities, specialized animal and plant studies, and for visiting docents.

Observing Nature

Man is seldom a welcome guest in the presence of wildlife. To observe animals in their natural habitat, several types of structures can be built to enhance nature observation opportunities in Dimple Dell Park.

Most animals are shy and secretive, using their camouflage and escape methods to disappear into their habitat. Inorder to observe nature, park visitors must be silent and very alert.

Structures which will allow visitors to be in wildlife habitat but not effect the behavior or activities of wildlife are:
1) Observation Decks
2) Wildlife Blinds
3) Observation Benches

Observation Decks

Made of timber construction, observation decks can allow park visitors to come within viewing distance of flora and fauna without disrupting plant communities or wildlife living there. Areas of the park where animal habitat is sensitive, an observation deck can allow interpretation and education to take place.

Wildlife Blinds

A wildlife blind is a structure that provides animal watchers a place of seclusion. Park visitors can view wildlife in their natural habitat at close range. A wildlife blind, depending on the type, can provide wildlife interpretation from a birds-eye-view or worms-eye-view.

Observation Bench

Several observation benches already exist in the park. They are located primarily where interesting views can be seen. The use of observation benches can be expanded to wildlife viewing areas where park visitors can sit quietly and observe animals. Wooden benches rather than aluminum benches will fit better with the natural environment in Dimple Dell Park.

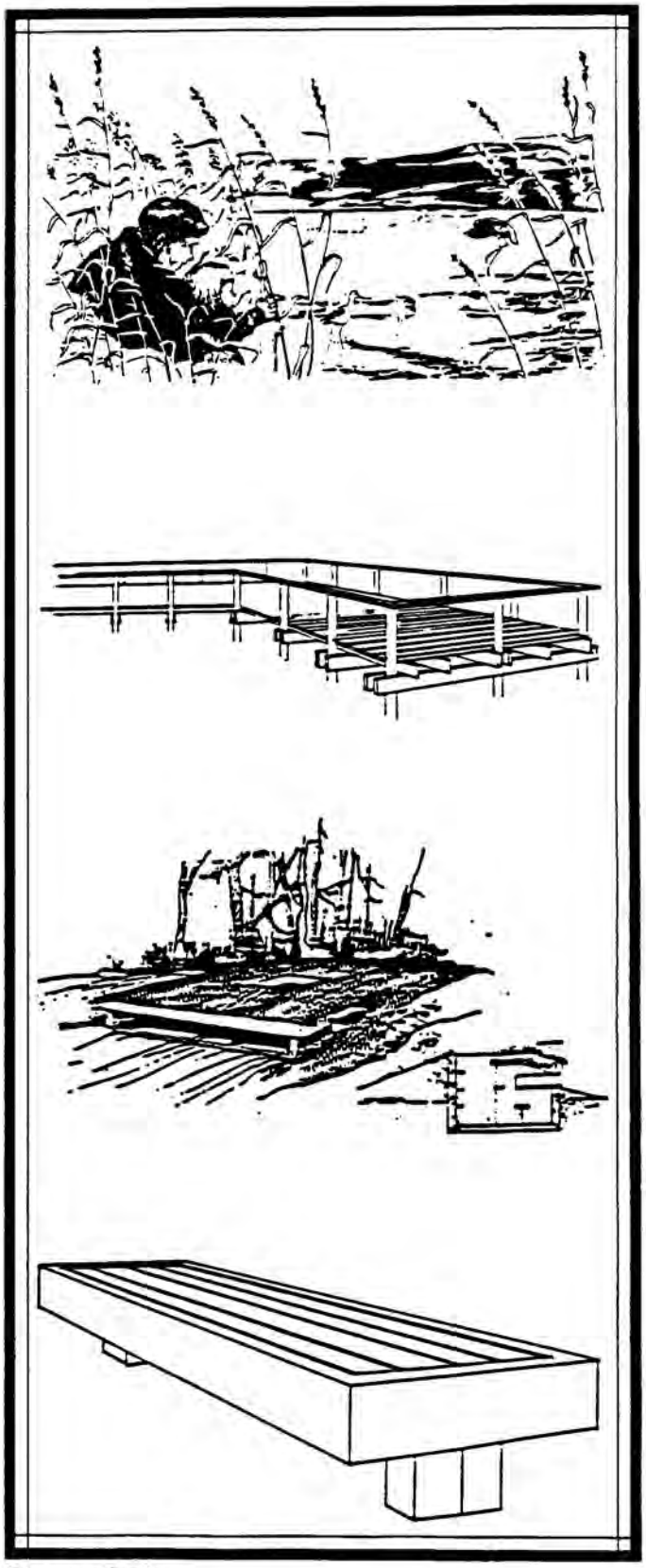
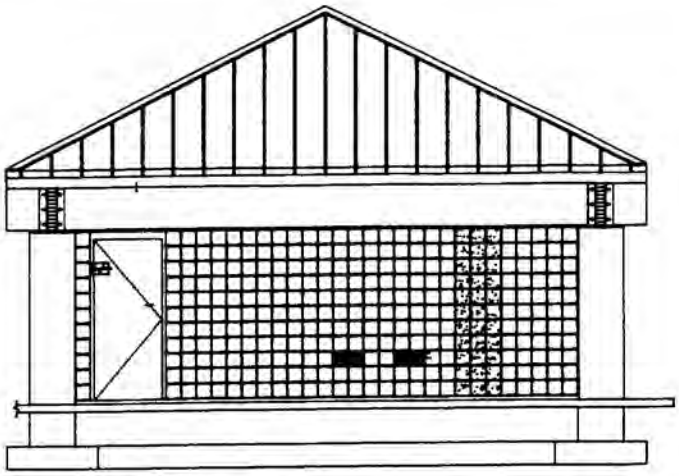
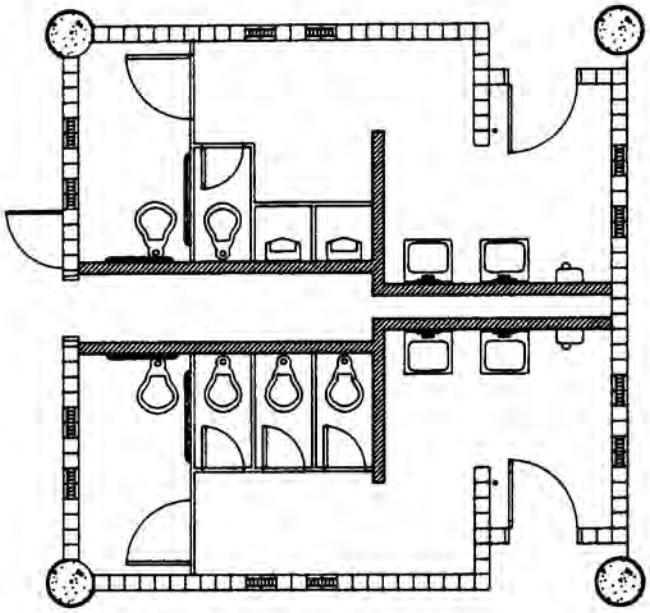


Figure F-8.

Observation Structures



Restroom Elevation



Restroom Floor Plan

Figure F-9 Restroom Facility

Restroom facilities are a necessary element in a regional size park. With activity nodes located long distances from each other, restrooms will need to be strategically located near maintenance roads, high-use areas and trail heads. Restrooms need to be durable and built to withstand vandalism. The architectural style should harmonize with other park structures

Restroom Facility

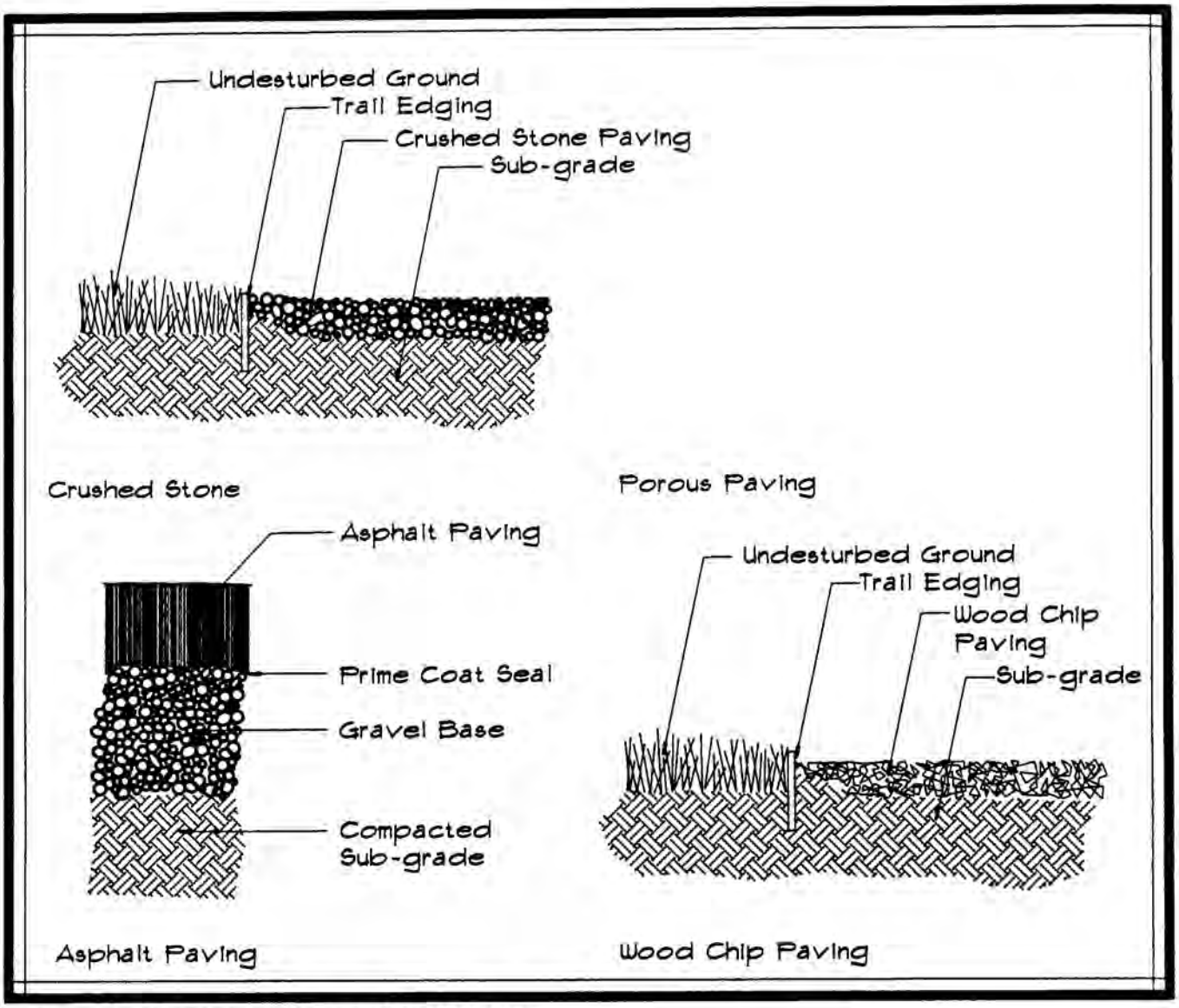


Figure F-10. Road Paving Alternatives

Where paving is needed for maintenance or emergency vehicles, the paving should not be intrusive on the natural environment. Paved trails can have a dual function. They can be designed to accommodate bicyclists and neccessary vehicles. Possible road surfacing materials can range from crushed stone, asphalt, porous paving systems, or wood chips. A buffer zone of approximately 3 feet beyond the edge of the pavement will be required for safe move of vehicles. Trees larger than 2 inches in caliper shall be removed from the buffer zone. Shrub and grass vegetation will not be excluded from the buffer zone. The road bed shall be cleared, grubbed and stripped of topsoil unless the organic layer is deeper than 3 feet, in which case a road base material is to be used as a sub-base for the paving material.

Road Paving Alternatives

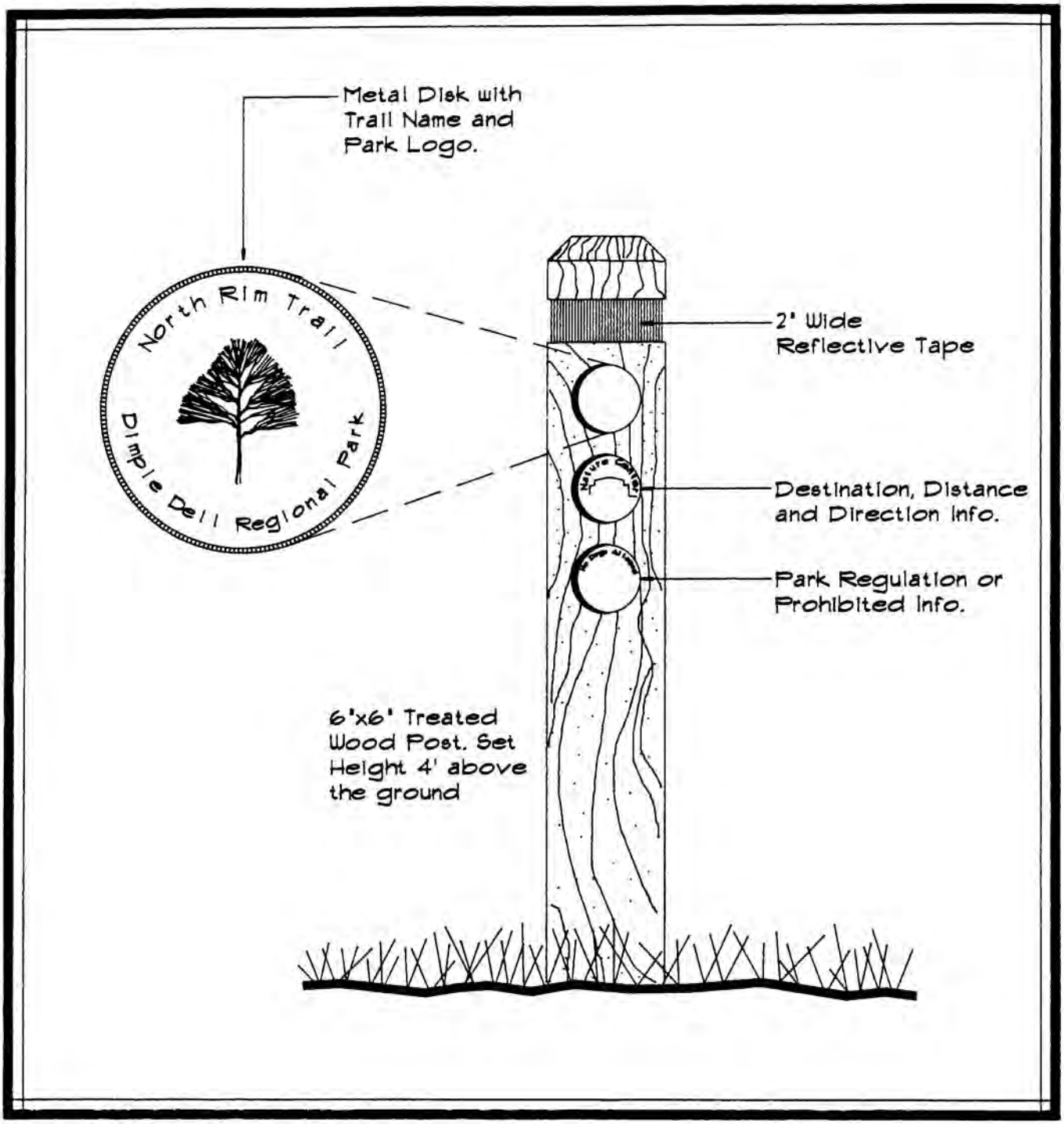


Figure F-11. Trail Signage Post

An effective method of displaying information without cluttering the landscape with signage boards, is to use a trail signage post. Trail posts can be located at all access points into the park, at trail intersections and can also be used as mileage markers. Metal information disks can be placed on all four sides of the post if needed.

Trail Signage Post

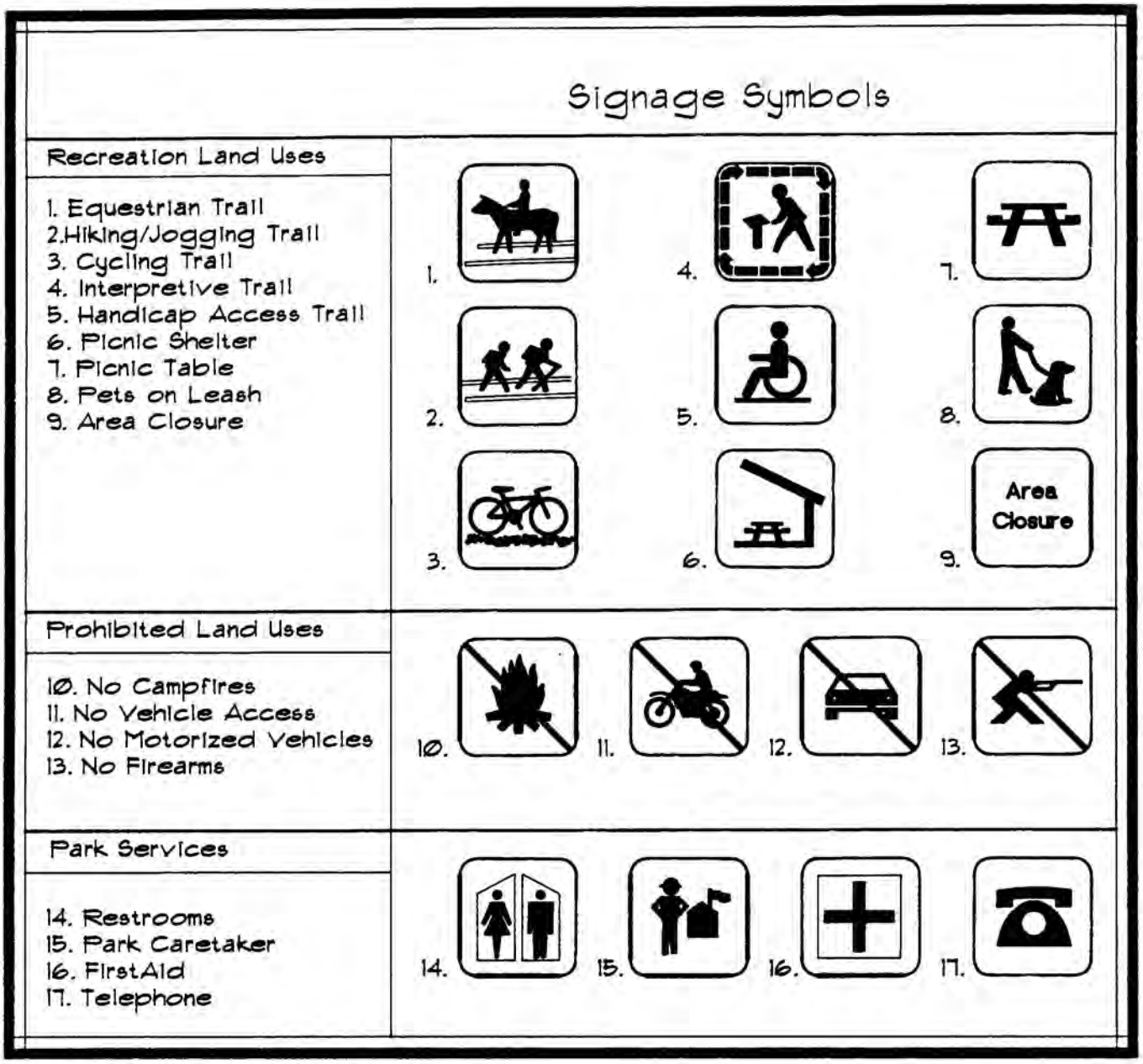


Figure F-12. Land use Signage Symbols

Internationally recognized symbols are effective ways to quickly communicate information to park visitors. Three categories of symbols have been developed to assist park visitors with knowing what services exist in the park, understanding park rules and regulations, and identifying activities and land uses. It is recommended that minimal signage be used throughout the park. An over abundance of signage will tend to distract from the natural environment of the park.

Land Use Signage Symbols

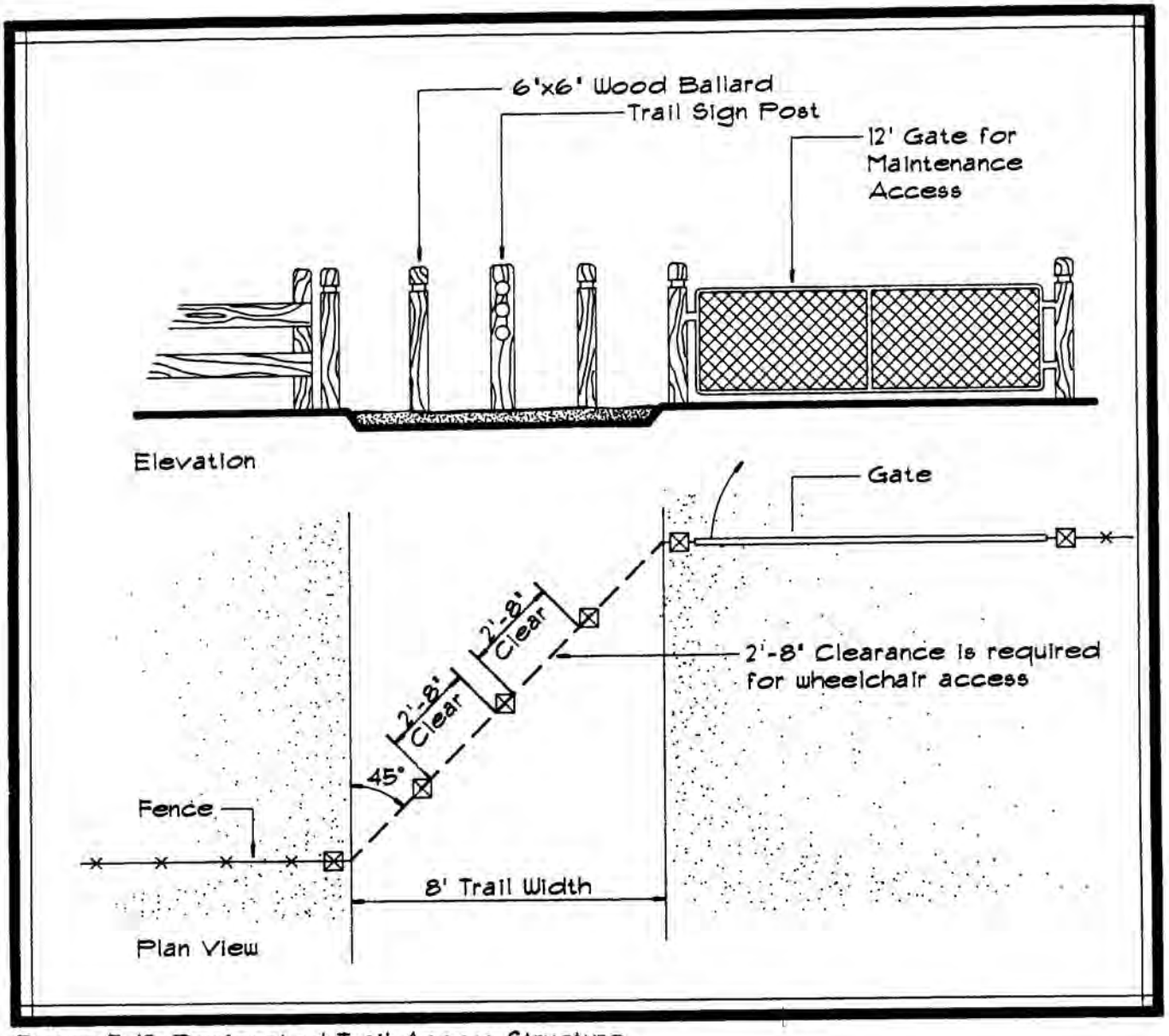


Figure F-13. Designated Trail Access Structure

Signage

Designated trail access points other than trail heads should have basic information regarding park regulations, permitted and prohibited uses, and information about any hazardous areas. Trail signage posts can provide some of this information and can be incorporated into the design of the trail entry structure.

Safe Access

When locating a trail access gate, consider the routes which pedestrians will take to safely reach the park access point.

Structures

The design of trail access structures may varied depending on the type of trail use. An effective trail access gate system will control the type of uses allowed onto the trail. A ballard gate system placed diagonally to the trail will make the space between the bollards appear narrower, slowing bicyclists and deterring motorcyclist from entering the trail. Where trails have been developed for handicap useage, the ballards should be spaced so that a 2 foot, 8 inch clearance exists.

Designated Trail Access Structure

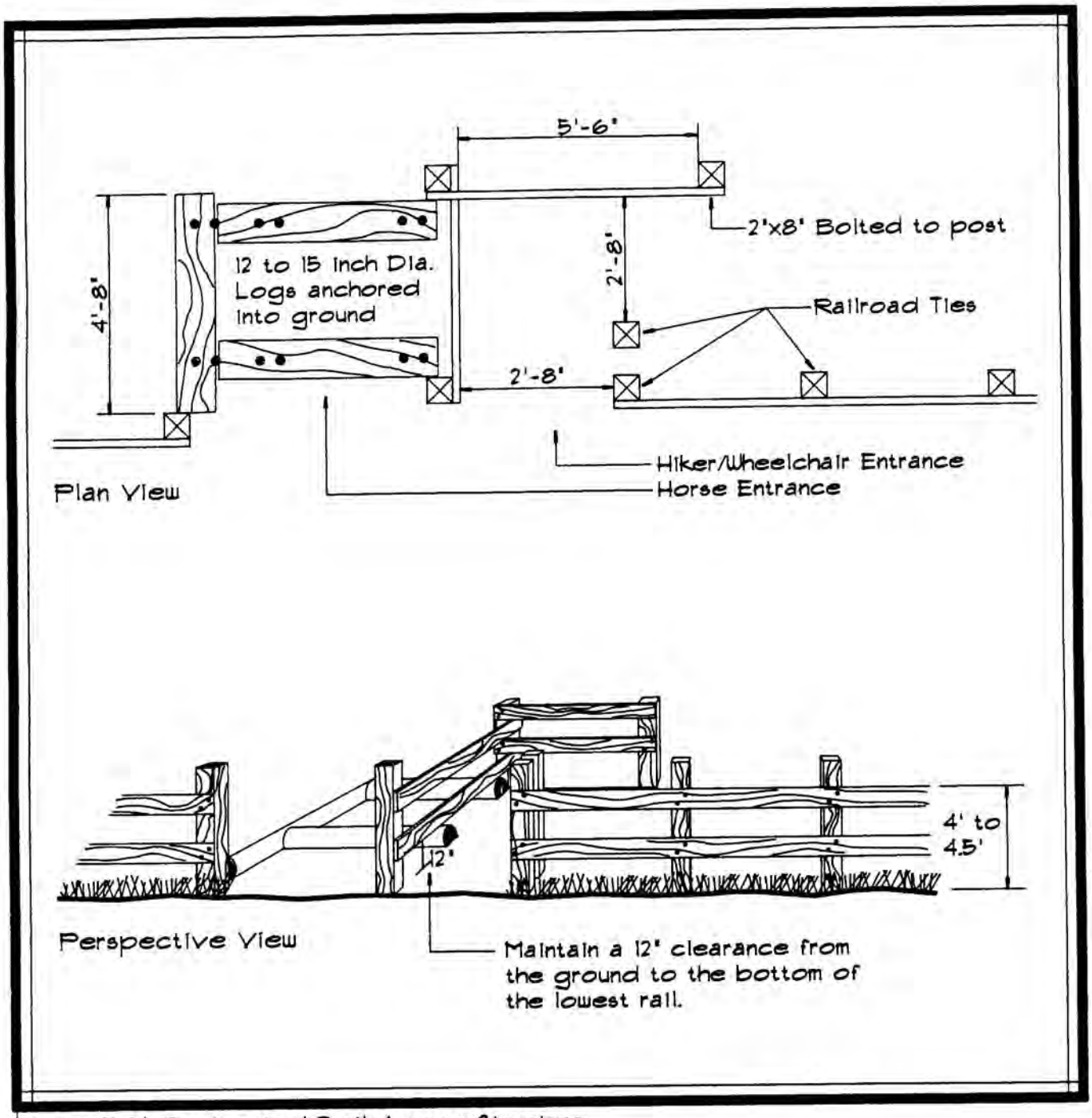


Figure F-14. Designated Trail Access Structure

Another alternative access gate is a timber structure allowing only selective uses to enter.

Designated Trail Access Structure